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Co-Editor
Darwin Alder
5415 Dickson
Houston, TX 77007
(713) 880-5946

Distribution
Gary Olson

Co-Editor
Constance E. Boone
3706 Rice Blvd.
Houston, TX 77005
(713) 668-8252

Editorial Advisor
Helmer Ode'
3319 Big Bend Dr.
Austin, Texas 78731
(512) 452-7799

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SEARCH AND SEIZURE

BY CONSTANCE E. BOONE

"SLOW AND STEADY
THIS ESCARCOT
SAYS SHE'S READY
TO GO"

With these words given in fun at the retirement luncheon at the Houston Museum of Natural Science, "Connie Boone" retired as curator after twenty-five years of work on the malacology collections at the museum.

A couple of years ago I began to make noises to the museum's president that I hoped they would begin to think of hiring a Ph.D. malacologist to take over the Department of Malacology. I had hoped that this would happen at the end of 1994 after I had served as President of the American Malacological Union and hosted the annual meeting in Houston. By Fall of 1994 we had accomplished selecting a candidate, but he had to finish a contract year elsewhere. (See the story on the new curator, Dr. John Wise).

On May 31, 1995, I made retirement official. I will still be involved with the museum as a research associate, hopefully getting back into some of my neglected research projects on mollusks from the Texas coast.I will continue, to help when I can.

For those of you who are new to the club, I review a little about the museum's malacology department history.

There are some very old historic collections dating back to early years, but the recent and presently cataloged material began when Dr. T. E. Pulley, then director and a Ph.D. malacologist, asked me to come and begin cataloging his Western Atlantic collection he was bringing over from Rice University. That was in 1970. He handed me a blank, unlined catalog book and sat me in his downstairs office (which was called the "shell hole" since he would leave his director's office and slip downstairs to look at shells!). I remember I brought in my own India ink pen.

In a short time, he asked me to formally take a job, part time, to do the work. My husband was due to retire; we felt that this might interfere with travels we intended to do. I did promise Dr. Pulley I would do the

work for him, without pay, and that is how it stayed for awhile. Eventually, I was asked to write letters and do other chores necessary for the department, and I became officially a Dollar-A-Year employee. It remained that way throughout the years, even when I became curator after Dr. Pulley's death. (Before that, he really was curator.) It was my gift to the museum.It was a labor of love.

All the time in the 70's I was also working with H. Geis and, H. Ode' on the Northwest Gulf Mollusk Population Survey. Eventually this was all moved from the Geis home to the museum, and I began to catalog this material. Dr. Helmer Ode' had been given the chore of providing nomenclature for the material, and we continue to publish his understanding of the species in TEXAS CONCHOLOGIST.

Today, the museum's cataloged collections consist of over 39,000 lots with the estimated number of 400,000 individual specimens. We are now computerizing the cataloged material.

With the addition of fine new acquisitions in the last few years, also old collections on hand, and the remainder of the Northwest Gulf material, there are approximately 20,000 lots still to be cataloged. We are building the fresh water unionid collection and expect to receive anticipated material from a university or two. There is no central place to see unionids in Texas, and fresh water mollusks have alwavs held my interest. (As a kid growing up near the San Antonio River where my father had a little ranch (we didn't live on it), I collected pretty shiny fresh water mussels. I knew my father leased the bend of the river every year or so to a button company in San Antonio so mussels could be flushed out with pressure hose and eventually turned into buttons.)

Actually, my latest figure on museum holdings of mollusks was announced recently to the board to be 1,000,000 specimens! We have a great land snail collection, with hundreds of tiny snails; we have several collections with many minute marine shells in vials, often up to 500 in one lot. I don't think I am exaggerating the total!

All the years as I worked, Dr. Pulley was my mentor, and I was also corresponding and providing local material for research to curators in some of the major Eastern museums.

It was also a wonderful learning time for me. Dr. Harold Harry also became a mentor and was especially helpful with understanding the

animals of mollusks. Some of you will remember times when Dr. Pulley prepared lunch, Dr. Harry joined us as he worked on oysters or helping arrange the library, and we were part of the crew at the museum.

Through all the years, members of the Houston Conchology Society have helped to provide material for the Northwest Gulf Survey and to prepare the specimens and then help with cataloging them. All of those who were part of the valuable gift to the museum should take pride in the accomplishment.

In addition to getting to work with many mollusks I couldn't collect myself, I was privileged to use the marvelous library housed at the museum. The library grew during the years as Dr. Pulley began to acquire the R. W. Barker books for the museum. It was a wonderful experience to have books showing how a specimen I had in hand got its name and to read the original description, often with hand painted illustrations.

I value the last 25 years more than anyone could ever know. I hope that I can still continue to learn about mollusks and return to local field work more than I have been able to do in recent years. I chose to go to exotic places in the world to search for mollusks. This is exciting and certainly helpful in learning the worldwide fauna. But there is still more to learn from Texas waters. I expect to be busy. I can't see myself sitting in a rocking chair. I have always said to my friends that I DREAM about shells, and I do, most of the time with me on a beach.

So THIS ESCARCOT probably won't GO very far, JUST TO THE NEXT BEACH.

MOLLUSCANBITS **contributed by Connie Boone**

Miss Fine's Advice:
The Nanny's Miss Fine (TV Comedy) states "I don't care how rich you are, you shouldn't eat anything that leaves a trail of slime behind."

NEW CURATOR OF MALACOLOGY

Dr. John Wise assumed his duties as Curator of Malacology in the Department of Malacology of the Houston Museum of Natural Science on June 1, 1995.

He comes to the museum after completing his Ph.D. at George Washington University in Washington, D.C., and serving as Assistant Professor of Biology 1994-5 at the University of Southwestern Louisiana at Lafayette. Dr. Wise is from South Carolina where he obtained his Masters in Marine Biology at the College of Charleston, Charleston, South Carolina.

While at GWU, Dr. Wise taught at the University and was a Smithsonian Fellow at the National Museum of Natural History, where he studied the anatomy and systematics of the ectoparasitic family Pyramidellidae and worked in the museum's general collections.

Dr. Wise plans to continue building the HMNS's malacological collection and continue his research on pyramidellids and related taxa, many of which he hopes to collect in the Texas waters. The museum's Northwest Gulf Survey material is of special interest to him, as it comprises one of the most complete regional surveys. Dr. Wise intends to add to this important survey material by collecting living representatives of the specimens already present in the collection.

Dr. Wise's new responsibilities will also require him to prepare future exhibits, and preparations have already begun for an updated and larger Malacology Hall. Short term projects include a new display case within Strake Hall for recent additions to the collection.

Dr. Wise and his wife, Marianne, (an elementary teacher), and their two children, John, 13 and Ellen, 9 intend to become active members of the Houston Conchology Society. The Wise family lives in Katy, Texas.

The club welcomes Dr. Wise and his family to our community and extends to them a membership for 1995-6.

IN MEMORIAM - HAROLD W. HARRY

In remembrance of our member Harold W. Harry, we think of him as a happy, knowledgeable and giving participant in activities of the Houston Conchology Society. Together with his wife, Mildred, we were always delighted to have him present. He enjoyed the club and always was willing to help with understanding the science of malacology. Never once, in all the time we knew him, did he hesitate to answer questions. Never once did he think of us as amateurs. That quality in this very professional malacologist was remarkable.

Dr. Harry died on June 30, 1995, at his home in Bellaire after many months of care resulting from removal of cancerous brain tumors. We give our love and support to his wife.

A celebration of his life was held in a service on July 23 in Rice Chapel at Rice University. A number of his students offered special tributes for his guidance as they pursued their studies to obtain Ph.D.s.

Dr. Harry earned his Ph.D. at the University of Michigan and served in the following capacities: Research Assistant in Limnology at the Academy of Natural Sciences of Philadelphia, supervisory zoologist in Civil Service at Walter Reed Institute of Research which led him to study the epidemiology of Schistosomiosis for three years in Puerto Rico, Chief Pharmacist Mate in the U. S. Navy, 1942-46, and Professor of Marine Biology, Texas A&M University. Post-retirement research led to important publications on worldwide oysters. He travelled to major museums for this study, helping to update collections and seeking information. We benefitted from his work by having him give talks to the club and in his numerous publications on various subjects in Texas Conchologist. Interested always in students, he helped to set up the requirements for the one-time student award offered by the club.

Active as a research associate at the Houston Museum of Natural Science, he was especially aware of the fine malacological library in the Department of Malacology and the material in the Northwest Gulf Mollusk Population Study. From time to time, he donated some of his own library and some of his own mollusk collection to the museum. Now, he has left his valuable library of books, research materials and microscopes to the museum. He was especially interested in having the Houston museum's malacological collections become of worldwide importance.

On a personal note, I remark that he was a very special mentor and friend. It was the greatest joy to me to discuss my finds and have him pull from his files notes that would immediately help me understand the animals I had found! I brought oysters preserved to him from many places in the world. He surely must have been a wonderful professor. There is simply no wonder that his students loved him.

He told me once that on a trip to West Mexico with his wife, he happened to find four different species of oysters and wanted to know about them. On his next trip to the Smithsonian, he looked into the oyster collections in the Natural History Museum and found that work needed to be done there. Immediately, Dr. Joseph Rosewater asked him to undertake the job, and eventually he did this also in other museums.

Besides mollusks, Hal and Mildred were involved with community developments, garden fauna and animals. One of my most vivid memories includes the period of time they cared for baby squirrels that fell out of trees in their yard. Those babies got the best care you can ever imagine, and Hal was especially innovative in his efforts to provide a home and food. The little animals were finally released to be free and wild.

We were priviledged to have him so active in the club after his years of retirement from A. & M. We will miss him but know he enriched our lives and our knowledge of mollusks and the appreciation of nature.

Memorials were suggested to go to the Department of Malacology, Houston Museum of Natural Science, 1 Hermann Circle Drive, Houston, Texas 77030, or to the Permanent Fund of the Friends of Bellaire Parks, P.O. Box 777, Bellaire, Texas 77402.

Connie Boone

Substitute "shell" for:

"How I love thee, little flower
though it be beyond my power
to guess thy species or thy genus
Do not let this come between us."

Tennyson (from Dr. Harry's files)

SHELLING IN TEXAS

BY DARWIN G. ALDER

Roe Davenport had invited me to accompany him on a trip to South Padre and Port Isabel, TX. It is about 350 miles from Houston. I had visited the southernmost tip of Texas before, but had never gone to the right places. I now know the location of some of the best shelling spots.

This is a very good location for shelling. There is the possibility of finding shells that are tropical or subtropical, that end up on Texas beaches from currents or storms, or by courtesy of the ubiquitous hermit crab.

Accomodations are nice at the Southwind Motel, which overlooks a cemetery, but has a nice view of picturesque South Padre Island, the Queen Isabela Causeway and Bridge.

The first place we tried on the morning of August 5, 1995 was a dredge site near the Coast Guard Station. We scooped a quantity of material from this locale for perusal later under a lens to sort out and find the smaller more hidden treasures. I looked at the dredge under my lens later and found such interesting shells as *Smargadia viridis* and *Tegula fasciata*. These shells are quite common in warmer waters of the Gulf and Caribbean.

Next we made our way to the jetty at South Padre Island. (You can see the jetty on the other side of the channel, but the only way to get there by car is from Brownsville, TX.). There were a substantial number of *Nerita fulgurans* on the rocks. I collected a nice pair. The tide was too high to see what was in the rock crevices and under the rocks; we would save that for later when the tide was lower.

We decided to visit the beach at the end of the paved road at South Padre Island. It was a bit difficult to walk across the sand to the beach. There was a lot of sargassum on the beach. We shook some of the clumps and encountered a number of *Litiopia melanastoma*. These tiny mollusks hang down among the sargassum fronds and berries and are well concealed, but we found them anyway.

We stopped at the bay by the Convention Center and walked along the edge of the bay. The tide was quite high but there were a number of nice specimens, especially those that are found in a bay environment.

We went for some lunch and then headed into Port Isabel to try to locate some *Melampus bidentatus*. All we did was almost lose our shoes in the muck of the mangroves. Low tide was not for a few hours, so we headed back to the jetty to try our luck there. The tide was much lower and we were able to add some species to our list. We found *Thais canaliculata, Thais rustica, Pisania tincta, Littorina lineolata*, and some other rock dwellers like *Anachis*.

It was now late enough to do some serious shelling. We went back to Dolphin Cove which is in the jetty park at South Padre Island, near the flats at the Coast Guard Station. We began our search in earnest. We were disappointed that the tide wasn't the lowest possible, but it yielded a large number of species. We were able to locate more *Nerita fulgurans* near the rocks by the Coast Guard Station. There were also a lot of grass beds which housed many small species of shells. There were some very interesting crabbed specimens. Roe treated me to a *Cymatium muricinum* he had found. We started to head back to other shelling sites. I looked down, and to my everlasting delight,found a *Cymatium krebsi*. Even if I didn't find another shell, my trip was successful. We didn't encounter any live cymatiums this time, maybe next!

We moved on to the end of the Queen Isabela Causeway Bridge and encountered a veritible bonanza of *Neritina virginea*. It was impossible to take a step without mashing several into the sand. There was every color and pattern imaginable. The flats were good for other species like a *Pleuroploca gigantea*, and a *Phalium granulatum*, both crabbed, but nice none the less. I was told that the closer to the mangroves, the greater was the possibility of mucky conditions. We had a lot of other places to go so we reluctantly left.

One of my favorite locations was a place you could see from the Motel. This was the North Shore of the channel at Port Isabel. It was a little difficult to get there (because the tide wasn't really low and there were clumps of oysters in the way, but once there, we found many wonderful shells. It is definitely a bay locale. There are many of the typical species to be found there, such as *Busycon, Argopecten, Lucina, Laevicardium, Semele, Mercenaria*, and *Dinocardium*. I have always wanted to test other locations, and have now had an opportunity to do so.

I was back to Houston on Sunday night, so my treasure hunt lasted a little more than 48 hours, but what a trip!

WHAT I DID THIS SUMMER BY ROE DAVENPORT

As the summer ends and all of the young people return to school, it is customary to greet one another with stories of the summer's activities. Since our shell club has been "off" for the summer also, it seems like a good way to start the new year, with stories of the shell collecting. This summer has been particularly interesting, and seems to merit a tale or two.

The tide chart showed that there would be 5 periods of low tides for the summer, all on weekends spaced at two week intervals. There are a number of good places to go along the Texas coast when the tide is low - the Corpus Christi Bay area, the Port Isabel/South Padre Island area, the Port O'Connor area, and the Galveston/Freeport area, are the most accessible without a boat. I haven't figured out a way to be at all of them at the same time, so I have had to choose among them. Here is what I ended up doing:

The first weekend was June 9-10. I had an opportunity to go to Mansfield Cut with David Hicks on the 9th, and it turned out to be a really rough ride, and the surf prevented a lot of activity around the jetty area. I did manage to locate a large group of *Nerita fulgurans* on the rocks, and one of them turned out to be *N. versicolor* when I cleaned it. Then I went on to the Freeport area, and discovered an interesting drift line on Quintana Beach, which included several species of *Epitonium*, as well as *Nassarius acutus, Natica pusilla, Olivella dealbata*, some of the common bivalves, and even a crabbed *Neritina reclivata*. Harold White and I collected on Surfside Beach to San Luis Pass on the next morning, and found mostly bivalves. For the afternoon low tide, we returned to the Bryan Beach/Quintana Beach area, and collected many more epitoniums. Then Harold and Freida and I went to Port O'Connor to see what interesting things we could find there, hoping to exploit a nighttime low tide. Of special interest was an area of heavy shell drift at the north end of the beach. We collected several bags of that, and moved to the north end of town as it got close to sunset. We did see many *Thais haemostoma floridana* out prowling around, but not many other shells as we had hoped for. I decided to let the mosquitoes win that battle.

The second low tide was June 23-4, and I decided to go south, to Port Isabel and South Padre Island, where I have had pretty good luck on

previous ventures. One feature of the low tides was that they were late in the day, and I have found that I can only be effective when I have good light. I was able to find a good array of the usual crabbed shells and bivalves that I generally find there I did find a nice, small *Hexaplex fulvescens*, a species that I don't commonly find among the crabbed shells,there, a *Distorsio clathrata*, and 3 *Cymatium muricinum*, of which one exceeds the world record. There were many fresh *Cantharus cancellarius*, still having periostracum on them.

For the third weekend, I decided to go back to the east, and concentrate on the flats at Bolivar and San Luis Pass. Harold White joined me for the trip to Bolivar, and we had a long hot afternoon, with very few shells. The next morning we visited Quintana Beach, and found a lot of wood and stuff on the beach. The best shells in it were a number of *Tellina alternata*. For the afternoon low tide, we had a real crew - myself, Harold and Freida White, Betty Bickham, Dean Woodard, Mary Martin and Darwin Alder. Quintana Beach had little else but tellins and *Busycon* egg cases. Freida did find one *Epitonium*. We went on to San Luis Pass, and found very few shells - it seemed that the shells had more sense than to be out in that heat. Harold concluded that he was a cold weather shelter. On the way home, I gave Port O'Connor another try. I found the usual crabbed shells *Polinices duplicatus, Thais haemostoma, and Busycon perversum pulleyi* but I also found a number of fresh *Busycon spiratum plagosum*, although most of them had damaged lips. The best shell that I found was a really fresh *Strombus alatus*, with one slight break. The drift that had been on the beach previously was no longer there.

The fourth weekend was July 21-3, and it seemed best to go where I had had so much success before, south to Port Isabel. Who knows, I might be able to find a few more cymatiums! I managed to arrive there earlier than I had planned, and discovered that the water was already off of the flats along the north shore, aided no doubt by a strong SSE wind. I checked into the motel and started to work. The first flat I visited produced a number of yellow cockles (I had been telling people that you don't find these in the summer), a *Hexaplex fulvescens*, and an almost perfect *Cymatium parthenopeum*, and that put a smile on my face. The next place turned up another *Hexaplex*, several *Fasciolaria lilium*, and more yellow cockles. I also found more fresh *Cantharus cancellarius*. At the next place, I found yellow cockles, two T*agelus divisus*, two more *Hexaplex* (after I had rejected two,

the next one that I encountered was a small one with fantastic spines), a horse conch with only a small chip in the outer lip, and more *Cantharus*. The next place, still on the Port Isabel side, produced another large *Tagelus divisus*, other bivalves, several tulips, a *Hexaplex*, more *Cantharus*, and a large *Cymatium nicobaricum* (over 2"). My wonderment was increasing as I went along. Then I had to go over to South Padre Island and check it out. Among the shells I found there was one that I didn't know for sure, but it turned out to be *Cymatium krebsii*. I also found a *Cymatium pileare* there. One of the most interesting findings was a band where there were fresh dead melanellas laying around (I was able to pick up 18 on this day, plus a *Pyrgocythara plicosa*, and more melanellas on Saturday and Sunday). By the time I got back to the motel and got everything labeled and taken care of, I was worn out and too excited to sleep. I had picked up 4 tritons in one afternoon, and 4 different species. Saturday provided more of the same, with 4 more tritons (two *C. parthenopeum*, one *C. nicobaricum*, and one *C. muricinum*) and other crabbed shells. Among the bivalves that I found were several *Parvilucina multilineata*, the first paired *Linga amiantus* I have found, a *Tellidora cristata*, several *Tellina texana*, several bay scallops, and a couple of paired jingle shells. Sunday I started at the same place that I had started on Friday, and was greeted with a surprising array of bivalves - *Ensis minor, Tellidora cristata, Tagelus divisus, Cyclinella tenuis, Semele proficua*, many yellow cockles, more scallops, a *Parvilucina multilineata*, numerous *Lucina pectinata, Laevicardium mortoni and Chione cancellata, a Macoma constricta*, 14 paired jingle shells, and one shell that I hadn't seen until this - *Macoma brevifrons*. At another location I thought I had found the missing triton, *C. cingulatum*, but it was only a *Tonna galea*, with a hermit crab! Also at this location I found the nicest tulip shell that I got this trip, 2 nice scallops, and a large *Tellidora cristata*. I went back to South Padre to finish my weekend. I found another nice small horse conch, some more scallops, and other things. At the flats south of the Coast Guard Station I found my *Cymatium cingulatum*, and a small *C. muricinum*, giving me 6 species of tritons for the weekend. I also found a small pen shell, *Atrina seminuda*, with serious spines on the sides. I visited with my friend Shirley before I left, and she told me that she and a friend had gotten 3 tritons on Saturday afternoon. What a weekend!

Finally, the 5th of the weekends was already committed. I had been trying to get Darwin Alder to come down to Port Isabel with me, and he had selected this weekend. The tides were not as low, and the shells were back down to previous levels, but we did find 4 tritons. We vis-

ited some areas that I hadn't been to on recent trips down there and collected some different shells as a result. one thing that stood out to me was the *Cerithium lutosum* that we found, crabbed. That is the first time in my travels down there over the last three years that I have found fresh shells of this species. In scooping through the grass on one flat, I came up with two *Tricolia affinis cruenta*. They seemed out of place there, but I later discovered that they had very small hermit crabs.

In the following table, I have summarized the shells that I obtained on the trips to the South Padre Island area this summer (including one that I had made in May). The last trip has been divided into two parts, the shells that I collected, and those that Darwin collected. The trip in July really stands out, in terms of the number of shells that I collected, and the number of species that were included.

Some of the entries in the table deserve comment. Probably the most noticeable number is that of *Diastoma varium* collected on the June trip. This is the result of an experiment. I had found a scoop net and had to try it to see what I could get with it. I went to an area of turtle grass, and made two sweeps through it. I was interested in what I had collected, so I brought them home and checked it - in addition to the diastomas (now known as *Bittium* again, Ed. note), I also got two *Mitrella lunata* and one *Anachis "semiplicata"*. On the May trip I obtained two species that wouldn't ordinarily be found. On the beach at the north end of the road, I found a *Geukensia demissa granosissima* on a clump of bamboo, and the two *Pinctada imbricata* on a plastic crate. I have.listed only paired bivalves, but in May I also obtained some interesting single valves on the beach next to the jetty *Callista maculata, Spondylus ictericus*, several *Laevicardium laevigatum*, many *Anadara chemnitzi*, and a couple of *Argopecten gibbus*.

I think that I had a great summer. Most of the times between the trips were spent trying to get the shells that I had collected cleaned. Now I'm ready to resume the winter season, with all of the meetings and shell collecting.

Shells Collected in South Padre Island Area Summer 1995

Species	May 14-5	June 23-4	July 21-3	Aug 4-5
Diodora cayenensis	0	2	1	0,1
Tricolia affinis cruenta	1	0	0	3,

Species	May 14-5	June 23-4	July 21-3	Aug 4-5	
Nerita fulgurans		1	1	5	2,5
Neritina reclivata		1	1	1	1,
Neritina virginea		6	1	2	1,5
Smaragdia viridis viridimaris		0	0	1	0,1
Littorina irrorata		0	1	0	0,1
Littorina lineolata		0	10	0	0,1
Architectonica nobilis		1	0	0	0,
Cerithidea pliculosa		2	3	0	7,2
Cerithium litteratum		1	1	2	0,
Cerithium lutosum		0	1	0	8,
Diastoma varium		0	376	21	0,
Litiopa melanostoma		0	0	0	9,
Balcis jamaicensis		1	0	33	0,
Strombus alatus		1	3	2	0,
Crepidula convexa		0	0	30	1,3
Crepidula fornicata		10	1	1	0,
Crepidula plana		0	0	3	0,1
Polinices duplicatus		26	8	25	4,
Sinum perspectivum		0	0	0	0,1
Cymatium cingulatum		0	0	1	0,
Cymatium krebsi		0	0	1	0,1
Cymatium muricinum		1	3	2	2,1
Cymatium nicobaricum		1	0	2	0,
Cymatium parthenopeum		0	0	3	0,
Cymatium pileare		1	0	1	0,
Distorsio clathrata		0	1	0	0,
Tonna galea		0	0	1	0,
Pyrgocythara plicosa		0	0	3	0,
Cantharus cancellarius		4	34	70	12,
Pisania tincta		3	2	7	15,3
Nassarius acutus		0	1	0	0,1
Nassarius vibex		0	3	2	28,2
Fasciolaria lilium		4	8	23	2,
Pleuroploca gigantea		2	2	3	1,
Busycon spiratum plagosum		1	0	2	0,
Busycon perversum pulleyi		2	4	11	2,
Anachis floridana		0	0	1	0,
Anachis semiplicata		14	8	4	4,

Species	May 14-5	June 23-4	July 21-3	Aug 4-5
Mitrella lunata	3	3	2	0,
Hexaplex fulvescens	0	1	7	0,
Thais haemastoma floridana	3	3	15	3,2
Thais sp.	0	3	8	9,
Thais rustica	4	4	30	5,
Thais rustica/haemastoma	0	0	9	0,
Oliva sayana	0	1	0	0,
Haminoea antillarum	0	0	4	0,
Bulla striata	0	2	4	2,
Barbatia candida	0	0	1	0,
Anadara ovalis	0	2	14	2,
Anadara transversa	0	5	8	1,
Noetia ponderosa	0	0	2	0,
Brachidontes dominguensis	0	0	3	0,
Brachidontes exustus	0	0	1	0,
Geukensia demissa granosissima	1	0	0	0,
Atrina seminuda	0	0	1	0,
Isognomon alatus	4	0	0	0,
Pinctada imbricata	2	0	0	0,
Argopecten irradians amplicostatus	1	1	36	0,2
Anomia simplex	0	0	16	0,
Crassostrea virginica	0	0	2	0,1
Ostrea equestris	0	0	1	0,
Lucina pectinata	1	10	21	3,5
Linga amiantus	0	0	1	0,
Parvilucina multilineata	0	0	9	0,
Trachycardium muricatum	0	5	35	0,1
Laevicardium mortoni	0	4	54	1,2
Laevicardium robustum	1	3	10	1,1
Mactra fragilis	1	4	29	1,
Mulinia lateralis	0	2	1	0,
Spisula solidissima similis	0	1	1	0,
Ensis minor	0	0	2	0,
Tellina alternata	0	0	1	0,
Tellina texana	0	0	18	0,
Tellina sp.	0	0	1	0,
Tellidora cristata	0	0	3	0

Species	May 14-5	June 23-4	July 21-3	Aug 4-5
Macoma brevifrons	0	0	1	0,
Macoma constricta	0	2	4	0,
Donax variabilis roemeri	0	5	0	0,
Semele proficua	0	0	3	0,
Abra aequalis	0	0	1	0,
Tagelus divisus	0	0	4	0,
Dosinia discus	0	3	1	0,
Cyclinella tenuis	0	0	5	0,
Chione cancellata	0	8	23	0,2
Mercenaria campechiensis texana	1	7	24	1,2
Sphenia antillensis	0	1	0	0,

ANNOUNCEMENT

DR. HAROLD W. HARRY AWARD

The Houston Conchology Society has established the Dr. Harold W. Harry Award to support graduate research in malacology at both private and public Texas institutions. As funding permits, an annual stipend of $500.00 will be awarded to a full-time graduate student studying molluscan phylogeny, ecology, physiology, etc. The recipient may use these monies to help defray travel (e. g. meetings, field work, museum visits) and research expenditures, (e. g. supplies, electron microscope time, etc.)

Interested students must submit a completed application (available from the editor of Texas Conchologist) and a concise, one page proposal, outlining their research. All paperwork must be submitted by March 1, 1996. Announcement will be made by May 15, 1996.

MONOGRAPH **BY H. Ode**

Distribution and Records of the Marine Mollusca in the Northwest Gulf of Mexico
(A continuing Monograph: Superfamily Pyramidelloidea, Part VII, Turbonillinae, continued).

Turbonillae Simroth, 1907.

[Ed. note: Although we printed some material in the last 2 issues on *Turbonilla*, we omitted introductory remarks on the subgenus Turbonillae and include this here.]

This is a group of elongate, many whorled shells, whose classification is based mostly on shell characteristics. The many subgenera and sections are often poorly defined; here only a few genera will be used. Without additional biological studies and anatomical work it will be impossible to classify the many hundreds of species worldwide properly. Here it will be merely attempted to sort out the species along the Texas-Louisiana coast and offshore shelf areas.

Species of *Turbonilla* have been described since the early 19th century. The first author to be fully aware that this group offered very serious difficulties was Dall (1892). His discoveries and remarks concerning *Turbonilla* are still among the clearest available and often my interpretations are based on remarks in various of Dall's papers. Preceeding Dall's work a number of species had been described by d'Orbigny (1842) from Cuba, some from New England and Jamaica by C. B. Adams (1839, 1840, 1850) and Holmes (1860) had named several fossil shells from the Carolinas, most of which Dall placed in synonymy with recent species.

It is unfortunate that many of the original descriptions and figures must be considered inadequate for the identification of the survey material. Many investigators apparently were of the same opinion--probably no types are available--and the result was that a number of earlier named species have disappeared from the literature. After a listing by Dall (1884), Bush (1899) summarized the knowledge about the semi-tropical species of *Turbonilla* as it existed at the turn of the century. Unfortunately her work did not shed new light on the relationship between recent species and fossil ones, f. i. those of Holmes. In it was started the extreme reliance on structural detail which became so prominent in the works of Bartsch and Corgan.

Dall (1892) was of the opinion that *Turbonilla* species could range from the Miocene into the recent. Bartsch and later Corgan considered species far more restricted in a temporal sense. All of Bartsch' Pliocene species from St. Petersburg, Florida (1955) are named as new species. Corgan (1967) described almost all turbonillas from a Pleistocene clay (mudlump fauna from the Mississippi Delta) as new species. It is somewhat ironical that both these faunas are in many respects very similar to the present fauna on the Texas-Louisiana shelf. It is highly unlikely that all turbonillas of the Pleistocene fauna of St. Petersburg died out completely without leaving a trace in the present fauna or that a Pleistocene fauna off Louisiana was completely replaced by another fauna.

Apparently the many turbonillas of the Pliocene fauna of Florida did strike Bartsch as being different from the species living at present in that area; this is indeed true. The present living fauna of South Florida is largely a Tropical Caribbean one, containing many species not present in the old Caloosahatchian fauna. Species present in both faunas often appear different in color and intensity of sculpture. Here it must be stated with some emphasis that the Texas pyramidellid fauna can be closely correlated with the fauna described by Bartsch (1955). It is only to a lesser degree possible for Corgan's Pleistocene fauna. All his so called species are present in the survey material, but most of Corgan's material was woefully immature and was poorly described. However two of his species--truly undescribed--are fairly common on the shelf.

An extremely interesting feature of turbonillas is the common occurrence of serious injury to the shell. Quite often the shell appears to be crushed, but the living animal survived and the shell was often repaired by a patch of featureless lime. In one case of serious injury the angle of the spire changed 15 degrees and a partly double whorl was produced (see sketch for *P. portoricanus*). Nomura (1936) even named such a *Turbonilla* unnecessarily as *T. arcuata*! It is possible that this common type of injury is caused by the feeding of the animal on bivalve mollusks in the opened stage and that the sudden closure of the valve crushes the lip or the whorl of the parasitic *Turbonilla*. Many photographs in Bartsch' 1955 publication show this type of injury.

The turbonillas of the N. W. Gulf of Mexico can easily be split into two complexes. One of these contains shells with a helical nucleus, have a pure white color and the intercostal spaces are without spiral sculp-

ture discernable by the unaided eye. The other complex contains shells with a flat, drumlike or almost flat nucleus. These shells often display a color pattern of brown bands and are quite often spirally striated in the intercostal areas. The shells in the first complex are here designated by the genus name *Turbonilla*; and those of the second complex by the names *Pyrgiscus, Dunkeria, Tathrella, and Striopyrgus*. Further biological research has to justify the use of these genera.

(Continuation of genus *Turbonilla*)

537. *Turbonilla swiftii* Bush, 1899

> *Turbonilla swiftii* Bush, 1899; Proc. Acad. Nat. Sci., Phila., Vol. 51, p. 166, 173; no figure, recent Bermuda. Figure in Verrill and Bush 1900, Trans. Conn. Acad. Arts and Sciences, Vol. 10, p. 529, pl. 64, figs 21 and 21a, Bermuda.
>
> A possible synonym *Turbonilla (Turbonilla) procera* Corgan, 1967; Quaternary Micromolluscan fauna of the Mudlump Province, Mississippi River Delta. Ph. D. thesis, Louisiana State Univ., p. 211, pl. 11, figs 3, 4, 9. (only figure 3).

This very slender species forms the extreme end of the species series *crenulata* (robust)-*crenulata* (slender)--*penistoni*--*swiftii*; these species are undoubtedly closely related but appear to merge into one another. It is, for instance, not always possible to separate shells of *penistoni* from those of *swiftii*. When 50 to 100 specimens are available the majority can be labelled, but several intermediates remain. The same is true for the slender form of *crenulata* and *penistoni* which also have intermediates. However, *swiftii* and the slender form of *crenulata* will strike most taxonomists as completely different species. Hence the problem is here to define the species in the sequence. In my opinion the entire concept of "species" in such cases becomes very vague, in particular, if, as it happens in nature, continuous changes of the organism occurs in several directions at once. However, it is best to conform to tradition and treat the most slender form of the series as the species *T. swiftii*. Also the species *T. iolausi* Bartsch, belongs in the complex, but it is on another branch.

The shell of *T. swiftii* is uniformly tapered, its whorls are moderately inflated and its suture is not well grooved. The nucleus is rather small and the ribbing in the survey material is less sinuous than the figure in

Verrill and Bush 1900, indicates. Also the ribbing is more vertical.

Records HMNS Survey Collection: 13 lots from 25-70 fms., no live collected material; off Galveston and Freeport, off East Flower Gardens Bank. Also in mudlump fauna and off Port Aransas (70 fms.)
Max. size: 3.5 mm.
Geographical range: St. Thomas, W. Indies; Bermuda.

538. *Turbonilla pusilla* (C. B. Adams, 1850).

Chemnitzia pusilla C. B. Adams, 1850; Contr. to Conch. Vol. 1(5), p. 74, no figure, recent, Jamaica [not *pusilla* Phillipi, 1844, a European species. Both Bush and Cossman, invented new names: *Turbonilla minor* Bush 1899, Proc. Acad. Nat. Sci., Phila., Vol 51, p. 172, which is preoccupied by *Turbonilla minor* Seguenza, 1876, Boll. R. Comm. Geol. Ital., Vol. 7 (1), p. 14, from the Pliocene of Southern Italy; and *Turbonilla adamsi* Cossman, 1912, Revue Critique de Paleozoologie, Paris, Vol. 16, p. 214; preoccupied by *Turbonilla adamsi*, Clessiu, 1900, [in] Martini and Chemnitz, System. Conchyl. Cabinet 2d ed., p. 237, pl 41, fig.1.recent Hong Kong.

As stated above this small shell is without a valid name. It is quite small with a rather deep suture and for such a small species stout and with widely spaced vertical ribbing, which end at the periphery. It occurs sparsely in some samples from deeper water. A reasonable figure is given by Clench and Turner, 1950, pl. 49, fig. 11. The survey material may not be uniform.

Records HMNS Survey Collection: 20 lots from 14-75 fms., of which 1 lot contains live collected material (from West Flower Garden Bank at 50 fms.) Other lots from off Freeport and Galveston and Cameron (La.).
Max. size: 3.2 mm.
Geographical range: Cape Hatteras to Barbados; Miocene of Chipola beds, N. W. Florida (Dall, 1892, p. 259); Jamaica, Curacao, (de Jong and Coomans, 1988) and Brazil (Rios, 1975).
E. P. A..

Finally I report here two species of *Turbonilla sp. indet A* and *Turbonilla sp. indet B*, which are not congeneric with *Turbonilla*, but whose true relationship is not clear. They are possibly syrnolids and should belong in *Costosyrnola*.

539 *Turbonilla sp. indet A.*

This possibly undescribed very small species is reported here as *Turbonilla*. It is a slender, horn colored, somewhat shiny shell with a large nucleus perched on top. The vertical riblets are few, of low elevation and rounded in cross section and do not reach the suture. They disappear on the last whorl, which is finely striated by axial striae. The suture is shallow and the whorls are flattened. This species is obviously related to the next one.

Records HMNS Survey Collection: 2 lots, no live collected material, one from 23 fms. off Freeport, the other from 70 fms. off Freeport, Texas.
Geographical range: unknown.
E. P.A.

540. *Turbonilla sp. indet B.*

It is quite possible that this is the species Corgan (1967) described as *Syrnola ampla* (Corgan, 1967, p. 196, pl. 9, fig. 1).

This is a very slender, small, needle shaped species from deep water. Each whorl carries a number of somewhat flattened axials, sometimes not reaching the suture, separated by interspaces narrower than the riblets. These are perfectly straight and vertical. The suture is shallow and straight. The nucleus is fairly large and not quite drumlike but the initial whorl protrudes slightly. The aperture is rounded and oval and in some specimens there is a fold on the columella.

This species probably should be classified as a *Costosyrnola* which in many respects is a link between turbonillids and syrnolids.

Records HMNS Survey Collection: 6 lots from 37-75 fms., no live collected material. From 40 fms., 73 miles south of Galveston; off Freeport, (70-75 fms.); off Cameron, La. (37 and 55 fms.) and in the mudlump fauna, off La.
Max. size: 2.6 mm.
Geographical range: unknown.
E.P.A.

Genus *Pyrgiscus* Phillipi, 1841.

Under this label is collected a heterogeneous assembly of different shapes, widely distributed in all seas of the world. (Many hundreds of species). Many synonyms have been created and many subgenera or sections have been proposed. It is here not the place to discuss even an outline of their arrangement but it will be our task to delineate the species which live along the Texas Coast.

Beach rolled material is in most instances unidentifiable and only seldom allows identification due to its state of preservation. But even for well preserved material it is often difficult to state what constitutes a species and what not. The many so called species Bartsch described from the Pliocene of Florida represent, in my opinion, merely variants of a much smaller number of different and still living species.

Most of Dall's remarks on *Pyrgicus* are still fully actual today, as f. i. his observation concerning the difference in appearance between fresh, living material and dead shells or fossils of the same species. Freshly dead material, which has lost its shine is often best for illustration or descriptive purposes. This difference in appearance has caused discrepancies in description between fossil and recent material. Dall was convinced that too many names were employed for many similar things (T. W. I. F. S., 1892 p. 318: "For myself, I believe in the present state of science, that most stress should be laid upon the relationship, rather than trifling points of difference, since in the dust cloud of names applied to every individual mutation all generic principles become obscured.")

The in general confused treatment of *Pyrgiscus* and the unsystematic descriptions without critical comparison confirms another of Dall's remarks: "And for this reason I feel strongly that the undue multiplication of mere names is a serious stumbling block in the way of progress of science. A name is a handle and a thing needs one or at most two

handles to be properly managed. If it bristles with handles like a porcupine with quills we are necessarily driven to let it alone and they serve no good purpose." Many workers have ignored this advise as the many long lists of synonyms will show.

In Texas large numbers of *Pyrgiscus* have been collected. In fact the Texas coastal shelf is very rich in this group of poorly studied and even less understood gastropods. Therefore it may be helpful to list here some of the categories by which species are separated.

Sculpture on the whorls of the teleoconch. Quite varied are: vertical ribbing, presence of varices, horizontal spirals, grooving on the basis. In some species microscopic punctations, axial striae or reticulations can be seen under high magnification. The termination of sculpture, at the periphery, or its continuation over the base is considered to be of importance. Slanting of axial ribbing may vary considerably within a species and even on a single specimen. The cross section of the riblets can be rounded or squarish. The most variable aspect of the ornamentation is expressed by the many patterns in spacing of the spiral grooves or incised lines. Most of the different patterns of spiral arrangement do not deserve different trivial names.

Character of the aperture: In the published literature have been mentioned: shape of the aperture (oval, rounded, diamond shaped, etc.) presence of a peristome, degree of folding on the columella, denticles on the inner side of the lip, depression of the umbilical region, straightness of the columella, etc. All these characters are subject to considerable variation.

Characters of general shape: These appear to be of uncertain value. Shapes can be described as: elongate, conical, spindle shaped, pupoid, needle shaped, coronated. The apical angle which often determines the apparent slenderness of the shell is possibly in some species quite variable. Puzzling is the sometimes extreme variation in size. Apparently mature specimens of an equal number of whorls can differ by a factor 1 3/4 in. linear scale (seldom). The same occurs also in some other families (Cerithiopsidae). Another character is the ratio of the length of the body whorl to the total length of the shell, a ratio to which the eye is very sensitive. The precise formation of the suture appears variable. The depth depends on the inflation of the whorls and often also on the manner in which the vertical ribs terminate. In some species a shouldered or coronated effect is obtained by the presence of

an exceptionally well developed spiral ridge close to the suture, while in others the same effect is obtained by the sudden termination of the vertical ribs.

Color Characteristics: These must be considered unreliable. Color problems vary between a uniform pattern of dull or grayish white over uniform grayish yellow to orange, to uniform dark brown color, sometimes with spiral bands of darker or lighter hues. Clearly banded forms with one or two narrow bands occur among species of uniform white or grayish colors.

Nuclear characters and the early post nuclear whorls. These are most important in recognizing several subgroups in the *Pyrgiscus* complex, but are surprisingly seldom mentioned in the pertinent literature. Both the size of the disc-like nucleus and its degree of immersion in the shell are of importance and also the suddenness at which the axial ribbing start on the post nuclear whorl. In some species the "apex" of the disc is hardly visible above the rim on the postnuclear whorl; in others it is elevated high above it.

Among the many *Pyrgiscus* species of the Texas-Louisiana coast it is convenient (there is no direct biological justification) to distinguish three groups of closely related species. Outside these groups there is a large number of difficult-to-classify species. The first of these groups contains shells which have relatively slender, finely sculpted early post-nuclear whorls and are white or slightly yellowish in color. Because of this, its most common member is named the "*interruptus*" complex.

The 2d group contains species in which the early post nuclear whorls are narrower in the axial direction and much more coarsely sculpted. Often the color is reddish brown. The ribbing after the nucleus starts suddenly and not gradually as in most species in the "*interuptus*-complex". This group is here named the "*reticulatus-textilis* group" of species.

A 3d complex is formed by species in which the axials are rounded and not as sharp as in both other groupings. This is here named as the "*conradi* group"

An early study of Texas turbinellas appeared in the T.C (1971-1972). Further study since that date has convinced me that there are many synonyms among the many taxa invented for Western Atlantic mate-

rial. Many of these so called species are to quote Dall, 1892--"characterized by differences in strength and spacing of the spiral sculpture, which as a little reflection will convince anyone who has worked over large collections, is of but the slightest systematic importance in such cases as this."

Most species of *Pyrgiscus* and *Turbonilla* are quite variable in shape so that is is somewhat misleading to illustrate any of them by a simple figure. For space reasons only, we often publish a simple figure of each species as presented. It is probable that when the Western Atlantic species are better understood the number of different species will be drastically reduced.

(to be continued.)

a. *Turbonilla nucleus*

Fig. 1.

b. *Pyrgiscus nucleus*

Fig. 2 *Turbonilla swiftii*, 23 fms. off Galveston, Texas; 3.5 mm.

Fig. 3a *Turbonilla "pusilla* C B Adams", West Flower Garden Banks, 50 fms.; 1.9 mm.

Fig. 3b.from 40 fms., off Cameron, LA. 2.6 mm.

Fig. 4. *Turbonilla sp. indet A*; from 23 fms. off Freeport, Texas; 1.8 mm.

Fig. 5. *Turbonilla sp. indet B.*
a. 55 fms. off Cameron, LA;
2.4 mm.

Fig. 5 b.
55 fms. off Cameron LA;
2.6 mm.

LAMENT OF A FIELD BIOLOGIST

My former choice collecting spots.
Are shopping center parking lots
The meadow, once abuzz with bee,
Is still now, thanks to DDT.
Shades of Rachel Carson,
Whatever will become of me.

The glen where trilliums lolled in shade
And toadlets hopped, and chipmunks played,
In a watery grave has lain for years
Drowned by the Corps of Engineers.
My wild world is sinking fast,
Whatever will become of me

The marsh, a haunt of coots and rails,
Where Typha waved and wagged its tails,
Succumbed to an ignominious fate,
It's a cloverleaf on the Interstate.
Nature heaves a dying breath,
Whatever will become of me

Clear birch-edged stream with fauna rank,
With iris blue upon your bank,
Your poisoned pools I now scan,
My seine haul yields one Falstaff can.
Everything I love is gone,
Whatever will become of me

The fields are being, with great precision
Transformed into a subdivision,
The eagle falls, the lily dies,
And on the road a 'possum lies.
No doubt what will become of me,
Molecular Biology.

George W. Folkerts

From Hal Harry's Files.

THE SAINT AND THE SCALLOP SHELL *PECTEN JACOBEUS* (LINNAEUS) AND SANTIAGO DE COMPOSTELA

BY RUSTI STOVER

Saint James, the first martyred of the Twelve Apostles, is the Patron Saint of Spain. He is indelibly associated today with the scallop shell, and Linnaeus named one in his honor; *Pecten jacobeus* (L., 1958). The story of this association is legendary; that is to say, based mostly on legend or myth, more fiction than fact indeed, but compelling. It has fueled pilgrimages to the cathedral and shrine in Spain since the ninth century A.D., and even today visitors come in numbers close to one hundred thousand a year. Even the famous walk the pilgrimage paths that wind through Spain, wearing sometimes today symbolic shells around their neck. The actress Shirley MacLaine recently made the news when she made the ardous journey.

What is behind the religious fervor connected to this shell and saint? Quite a story.

James the Apostle was the son of Zebedee, a fisherman of Galilee, and Salome, sister to the virgin Mary. This of course, in a modern family, makes James and Jesus cousins, and ultimately James and his brother John became two of their cousin's apostles.

After the crucifixion, resurrection and ascension of Jesus, the Apostles supposedly split off to far lands to spread the holy word. James, it is said, went to Spain. Having little success there after a time, he returned to Jersualem, where he was beheaded by King Herod Agrippa I (New Testament Book of Acts). According to the Legend, his disciples took his remains and put them on a ship, which miraculously reached the northwest coast of Spain from Jerusalem in just one day. Some reports say the ship was made of marble (?) and that a mounted Spanish knight, watching the ship enter the harbor, was thrown from his horse into the sea, only to be saved by climbing aboard the ship. As he emerged from the sea, so goes the legend, the knight's clothes were seen to be covered with scallop shells. St. James is sometimes depicted as a pilgrim wearing a cloak covered with shells. At any rate, a *Pecten* from Spain became the symbol of Saint James.

The apostle's remains were supposedly interred in an earlier church at Santiago which today has grown to be a huge complex of churches, schools, hospitals, museums with the great cathedral known as Santiago de Compostela. This is located on the northwest coast of Spain close to the port of Padron where the remains were supposedly brought to in the beginning of the legend.

During the ninth to twelth centuries, religious pilgrimages were in fashion, wherein remission of sins was granted by veneration of martyrs' graves and visits to bible lands. This was also fueled by dictate of clergy at the time; one could either pay for remission of sins if one was rich, or undertake a pilgrimage if one was poor. Pilgrims also sought cures for ailments. An old pilgrim's guidebook tells how, in the year 1106, a knight of Apulia was cured of the goiter by the touch of a seashell.

The pilgrims travelled along special routes from France and Italy to the northwest of Spain, stopping at monastaries, hospitals or inns along the way. Their "Pilgrim's uniform" usually consisted of rough clothing, a walking staff with a water gourd, and a bag or scrip on which might be a *Pecten* shell depicted in embroidery or drawing. On return home, these pilgrims attached real valves of scallops bought at Compostela to demonstrate they had completed the journey to the shrine. As early as 1130 A.D., it is known that booths around the cathedral offered *Pecten* shells for sale. By that time it was indelibly known that the Spanish *Pecten* was a a symbol of St. James. However, early sculptures and paintings and stain glass windows in churches did not include the scallop in depicting St. James.

Santiago de Compostela is actually inland some 16 miles from the coast. The scallops probably were brought there in the beginning as food. The convex valve of the local scallops became the souvenir that could be bought by the pilgrims to prove that they had completed their journey to the shrine.

Oddly, the actual species used by the pilgrims was not Linnaeus's *Pecten jacobeus*. Linnaeus named another Spanish scallop *Pecten maximus*, also in 1758, and it is this scallop which was probably the one at Compostela since it is the commonly fished and edible scallop from Atlantic Spain. *P. jacobeus* is known from the Mediterranean and the southern coast of Spain. Actually, Linnaeus placed both scallops in the genus *Ostrea*, changed by later authors to the genus *Pecten*. Com-

munication was poor in the days when Linnaeus named the scallops, and he may not have known exactly where the shrine was located.

Sources and Footnotes:

Research Sources:

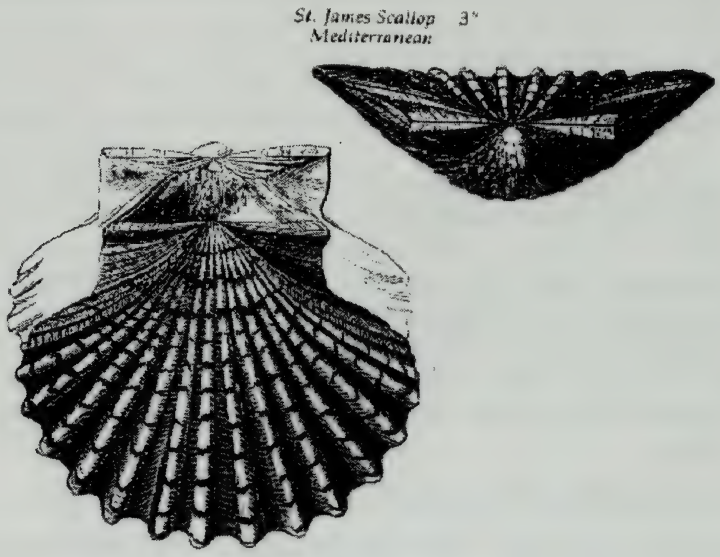
Smithsonian Magazine, February, 1994: "Travelling Spain's Pilgrimage Roads", by S. Winchester

"Seashell Parade" by A. Gordon Melvin, PhD; fascinating facts, pictures and stories. Chapter 6, p. 42-46. (this is the book that states that Compostela is not on the coast.)

Numerous other sources from browsing articles at the Bellaire (TX) library.

Graphic art submitted with article: Shell Desk Diary, 1980.

(Editor's Note: Some facts have been added to the above story, taken from "The Scallop, Studies of a shell and its influences on humankind", edited by Ian Cox, by eight authors, published in London by the Shell Transport and Trading Company, Limited in 1957 on the occasion of the Diamond Jubilee of that company. Christopher Hohler, M.A., of the Courtauld Institute of Art, University of London researched the St. James badge and presented a chapter entitled The Badge of St. James in this book. Both Constance Boone and John Wise attended an international conference on malacology (UNITAS) at Vigo, some 30, kilometers from Santiago de Compostela in September, 1995. Valves of *Pecten maximus* were still sold by the little shops near the cathedral which they visited. This scallop is commercially fished and is commonly served in restaurants at Vigo.)



from Shell Desk Diary, 1980

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The Texas Conchologist is the official publication of the Houston Conchology Society, Inc., and is published three times annually at Houston, Texas. It is distributed as part of the dues to all its members.

The Society holds regular meetings the fourth Wednesday in each of the following months: August, September, October, January, February, March, April, and May. In November, the meeting is held the third Wednesday.

Meetings are held at Southside Place Club House, 3743 Garnet, Houston, Texas. Meetings begin at 8:00 p. m.

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Co-Editor
Darwin Alder
5415 Dickson
Houston, TX 77007
(713) 880-5946

Distribution
Gary Olson

Co-Editor
Constance E. Boone
3706 Rice Blvd.
Houston, TX 77005
(713) 668-8252

Editorial Advisor
Helmer Ode'
3319 Big Bend Dr.
Austin, Texas 78731
(512) 452-7799

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A LIST OF TURBONILLID TAXA FOR THE WESTERN ATLANTIC

BY H. ODE`

This list is a compilation of all turbonillid taxa for the Western Atlantic I have been able to find in the literature. Where possible, probable synonyms are indicated and most of those proposed or discovered by others are mentioned. I am convinced that more than half of all entries in the list pertain to invalid species. A number of investigators have created many species from the same handful of shell grit, especially Bartsch (in many papers) and Corgan (in his Ph.D. thesis). These authors erected many species so closely similar that only by a precise count of trivial detail in ornamentation or shape can a distinction be made. According to these and some other workers, turbonillid species have an extremely narrow range of variation. In this manner a large number of unnecessary species was created. I have tried to sort out many of Bartsch's taxa from his 1955 paper. In 1967 Corgan created a large number of new taxa based mostly on insufficient or juvenile material. Many of his names are at the moment unverifiable and have never been properly validated (unpublished Ph.D. thesis).

Included in this list are also Miocene and Pliocene species, many of which are known. Also Eocene material has been included, in spite of the fact that modern faunas are quite distinct from the early pyramidellids of the Eocene; relationships between Miocene and recent faunas, however are often close. I suspect that many of the Pliocene species described as distinct from recent ones are identical with recent ones. Assuming that a "good" species lives at least as long as 5 million years (Estimate by S. J. Gould) it is remarkable that during the end of the Pleistocene hundreds of new species evolved of which there is no trace in the fossil record and that during the same period countless Pliocene species died out.

Not included in the list are all eastern Atlantic species, although there are undoubtedly close ties between West African species with species in the Caribbean. Also there are closely related, if not identical, species on both sides of the North Atlantic. But the most serious omission here is the absence of all taxa from the Pacific coast of North America and Middle America, all the way south to Ecuador and including the Galapagos Islands. It is most probable that there exist close analogues-if not identical species-to the Western Atlantic species among the turbonillid species of the Panamic faunal province. A list for this area has been prepared, but its inclusion here would make this list too cumbersome.

It is more than likely that a number of pyramidellid species, especially some in tropical seas, occur world wide. This is in direct contradiction to the unfortunate habit followed by some workers to give new names to any handfull of shells obtained from locations not more than a few hundred miles apart or to fossil ones from formations not more that 1 or 2 million years ago.

As long as few comparative anatomical dissections have been made to define turbonillid genera properly, the taxonomy of this group of interesting gastropods will remain a mess. The bad habit to introduce without proper study replacement names arbitrarily for *Turbonilla*, *Chemnitzia*, *Pyrgiscus*, *Mormula*, *Strioturbonilla*, *Pyrgolampros*, and many others, and to assume that all form a simple genus *Turbonilla*, has in the past complicated and is still complicating the taxonomy of this group.

A list of turbonillid species:

abrupta Bush, 1899, *Turbonilla*; see *crenulata* Menke, 1830. [Non *abrupta* Clessin, 1900, from Cuba.]

abrupta Clessin, 1900 *Turbonilla*, p. 166, pl.29, fig. 6. Recent Cuba; poorly described and figured.

abyssicola Bartsch, 1909, *Turbonilla (Strioturbonilla) bushiana* var.....; See *magnifica* Seguenza, 1880.

acicula Holmes, 1860, *Turbonilla*; see *interrupta* Totten, 1835.

acisi Bartsch, 1955, *Turbonilla (Chemnitzia)*; see *iolausi* Bartsch, 1955.

acuta Meyer, 1836, *Chemnitzia*, p. 70, pl. 2, fig.6. Eocene of Mississippi; not pyramidellid [*Pseudomelaniidae*].

adamsi Cossmann, 1912, *Turbonilla*; see *pusilla* C. B. Adams, 1850.

admeta Bartsch, 1955, *Turbonilla* (*Chemnitzia*); see *hemphilli* Bush, 1899.

adonisi Bartsch, 1955, *Turbonilla (Chemnitzia)*, p. 21, pl. 3, fig. 8. Pliocene of Florida.

aequalis Say, 1827, *Turritella*; p. 208, no figure. The figure by Calnan,1980, pl.3 is not this species *(hemphilli)*. Entire east coast U.S.A.

aesoni Bartsch, 1955, *Pyrgiscus*; see *toyatani* Henderson and Bartsch, 1914.

agrestris Aldrich, 1911, *Turbonilla (Pyrgiscus)*, p. 10, pl. 4, fig. 2. Eocene of Alabama, U.S.A.; doubtful, perhaps *Bittium* related. [Non *agrestris* Laws, 1937, *Turbonilla*, p. 410, figs. 1, 1a, which was renamed *paleogenica* Corgan. 1969, p. 574].

alcmena Bartsch, 1955, *Turbonilla (Chenmitzia)*; see *crenulata* Menke, 1830.

alfredi Abbott, 1958, *Turbonilla (Pyrgiscus)*; see *vaughani* Bartsch, 1955.

americana d'Orbigny, 1846, *Chemnitzia*, p. 396, pl. 53, figs. 17-19. Recent, Rio de Janeiro to Bahia San Blas, Argentina. For figure see Rios, 1985, p. 166, pl. 45, no. 791.

angulata Guppy, 1897, *Turbonilla*: [in] Guppy and Dall, 1897, p. 316, pl. 28, fig. 10. Tertiaries of Jamaica [is *Pyrgiscus* or *Asmunda*]

angusta Gabb, 1873, *Turbonilla*; renamed *angustula* Pilsbry and Johnson, 1917. [Non *Turbonilla angusta* Deshayes, 1864 which is a *Syrnola* and may be the same as *Syrnola acicula* Lam.].

angustula Pilsbry and Johnson, 1917, *Turbonilla (Nisiturris)*, p. 176. Figure in Pilsbry, 1922, p. 392, pl. 36, fig. 7. Oligocene of Santo Domingo. See also Perrilliat, 1974, pl. 2, figs. 1, 2.

anira Bartsch, 1927, *Turbonilla (Mormula)*, p. 84, no figure. Recent, off Fernandina, Florida, in 294 fms.

anita Aldrich, 1907, *Turbonilla*, p. 9, pl.1, fig. 12. Eocene of the Southern U.S.A. Not turbonilled, probably *Iphiana*.

antaeusi Bartsch, 1955, *Turbonilla (Chemnitzia)*; see *iolausi* Bartsch, 1955.

apiculata Corgan, 1967, *Turbonilla (Turbonilla)*; see *heilprini* Bush, 1899.

apolloi Bartsch, 1955, *Pyrgiscus*; see *toyatani* Henderson and Bartsch, 1914.

aratibacillum Pilsbry and Johnson, 1917, *Turbonilla (Nisiturris)*, p. 176. Oligocene (?) of Santo Domingo. Figure in Pilsbry, 1922, p. 392, pl. 36, fig 8.

areolata Verrill, 1873, *Turbonilla;* see *interrupta* Totten, 1835. [non *Chemnitzia areolata* de Rayneval, v. d. Hecke, Ponzi,1854 which according to Cerulli Irelli, 1914, p. 261 is *Parthenia indistincta*].

arnoldoi de Jong and Coomans, 1988, *Turbonilla*; see *elegans* d'Orbigny, 1842.

asperella Corgan, 1967, *Turbonilla (Turbonilla)*, p. 213, pl. 12, fig. 10. Pleistocene Mississippi Delta [Mudlump fauna]. Non validated taxon (unpublished Ph.D. thesis). Possibly *ornata* d'Orbigny, 1842.

asperula Bush, 1899, *Turbonilla*, p. 151 and 176, no figure. Figure in Verrill and Bush, 1900, p. 530, pl. 65, fig. 73. [as *Pyrgostelis (Mumiola)*]. Possibly the same as *textilis* Kurtz, 1860.

atlantica Locard, 1897, *Parthenia*, p. 444, pl. 19, figs 16-18. Recent from 1900 m. Atlantic. According to Nordsieck, 1972, p. 96 a *Pyrgolampros*.

atlasi Bartsch, 1955, *Turbonilla (Chemnitzia)*, p. 24, pl. 4. figs. 5a, b. Pliocene of Florida. Possibly the same as *penistoni* Bush, 1899.

atypha Bush, 1899, *Turbonilla*, p. 170 and 173. Never figured. Recent, Maldonado Bay, Uruguay; described from poor material.

augeasi Bartsch, 1955, *Turbonilla (Chemnitzia)*; see *hemphilli* Bush, 1899.

baca Corgan, 1967, *Turbonilla (Turbonilla)* p. 217, pl.11, fig. 8. Pleistocene, Misissippi Delta (Mudlump fauna). Non validated taxon (unpublished Ph.D. thesis).

bartschi Aguyao and Rehder, 1936, *Turbonilla (Careliopsis)*, p. 267, pl. 24, fig.7. Recent, Cuba. Belongs in *Ebala*, which may be eulimellid.

beatula Pilsbry & Johnson, 1917, *Turbonilla (Pyrgiscus)*, p. 174, Oligocene (?) Santo Domingo; Figure in Pilsbry, 1922, p. 391, pl. 36, fig. 2. also Miocene of Trinidad. Said to be close to *P. puncta*.

belotheca Dall, 1889, *Turbonilla*, p. 335, pl. 26, fig. 7d. Recent, South half of Florida, West Indies, in 20-95 fms.; *bellotheca* is a misspelling.

bermudensis Dall and Bartsch, 1911, *Turbonilla (Careliopsis)*, p. 279, pl.35, fig. 4. Recent, Bermuda, Yucatan; not turbonillid, but belongs in *Ebala*.

bidentata Meyer, 1886, *Odostomia*, p. 70, pl. 1, fig. 3. Eocene of Alabama, U.S.A. May be a *Pyrgolampros*. See figures in Gardner, 1945, pl. 27, fig. 1b.

branfordensis Bartsch, 1909, *Turbonilla (Prygiscus)*; see *elegantula*, Verrill, 1882.

bruscasensis Weisbord, 1962, *Pyrgiscus*, p. 477-479, pl. 45, figs. 10-13. Lower Pliocene, Venezuela. Perhaps the same as *Turbonilla virginica*, Henderson and Bartsch, 1914.

bushiana Verrill, 1882, *Turbonilla*; see *magnifica* Seguenza, 1880.

buskirkae Corgan, 1967, *Turbonilla (Pyrgiscus)*; see *tabulatella* Corgan, 1967.

buteomis Bartsch, 1909, *Turbonilla (Pyrgiscus)*; see *interrupta* Totten, 1835.

butlerae Corgan, 1967, *Turbonilla (Pyrgiscus)*, p. 230, pl.11, fig. 5. Pleistocene, Mississippi Delta (Mudlump fauna). Non validated taxon (unpublished Ph.D. thesis).

cacusi Bartsch, 1955, *Turbonilla (Chemnitzia)*; see *crenulata* Menke, 1830.

cadmusi Bartsch, 1955, *Pyrgiscus*, p. 49, pl. 9, figs. 6a, b. Pliocene

of Florida. Synonyms are:
tityusi Bartsch, 1955, *Pyrgiscus*, p. 40, pl.7, figs. 1a, b. and *hebeae* Bartsch, 1955, *Pyrgiscus*, p. 52, pl. 9, figs. 4a, b. both from the Pliocene of Florida.

cancellata d'Orbigny, 1842, *Chemnitzia*, pl. 17, figs. 1-3; atlas, 1853. Recent, Cuba. Not turbonillid, but *Odostomia* (?). [Non *Dunkeria cancellata* Carpenter, 1857, p. 435, Mexico, Pacific; nor *Turbonilla cancellata* Holmes, 1860, p. 85, South Carolina, nor *Turbonilla cancellata* Turton, 1932, p. 99, pl. 21, fig. 724, South Africa].

cancellata Holmes, 1860, *Turbonilla*; see *reticulata* C. B. Adams, 1850.

caroliniana Holmes, 1860, *Turbonilla*; see *reticulata* C. B. Adams, 1850.

cascoensis Bartsch, 1909, *Turbonilla (Pyrgiscus)*; see *interrupta* Totten, 1835.

cedrosus Dall, 1884, *Parthenia*, pl. 10. fig. 11., recent Cedar Keys, Fl. is a *Striopyrgus*. A synonym is *hybridus* Bartsch, 1955, *Striopyrgus*, p. 57, pls. 10-14, figs. 1-61, described as a hybrid between *Pyrgiscus* and *Strioturbonilla* from the Florida Pliocene.

cerberusi Bartsch, 1955, *Turbinella* (sic!) *(Chemnitzia);* see *crenulata* Menke, 1830.

cercadensis Maury, 1917 *Turbonilla ((Chemnitzia)*, p. 148, pl.25, fig. 13. Miocene, Dominican Republic.

chenowethi Corgan, 1967, *Turbonilla (Pyrgiscus)*, p. 229, pl. 12, fig. 7. Pleistocene, Mississippi Delta (Mudlump fauna). Non validated taxon (unpublished Ph.D. thesis).

chipolana Dall, 1892, *Turbonilla*, p. 258, no figure. Tertiary, Chipola Beds, Florida. Possibly a *Strioturbonilla*.

cingulata Dall, 1892, *Turbonilla reticulata* var...; see *reticulata* C. B. Adams. A synonym is: *inoae* Bartsch, 1955 *Pyrgiscus*, p. 50. pl. 9, figs. 5a, b Pliocene, Florida. It is closely similar to *Turbonilla (Pyrgiscus) callipeplum* Dall and Bartsch, 1909, recent, Panama Bay; also compare *Turbonilla (Prygiscus) dina* Dall and Bartsch,1909 which may be the same.

clessini von Ihering, 1907, *Turbonilla*; see *iheringi* Clessin, 1900, second species.

clinensis Aldrich, 1921, *Turbonilla (Ptycheulimella)*, p. 9, pl. 1, fig. 10, Eocene of Alabama, U.S.A. Not turbonillid.

clionae Bartsch, 1955, *Pyrgiscus*; see *acicula* Holmes, 1860 (under *interrupta*, Totten, 1835).

compsa Bush, 1899, *Turbonilla*, p. 168 and 172. Recent, no precise locality given. Described from a single specimen.

coalvillensis Meek, 1873, *Turbonilla (Chemnitzia)*, p. 505,

no figure. Cretaceous of Utah and New Mexico. Of doubtful pyramidellid affinity.

conferta Corgan, 1967, *Turbonilla (Turbonilla)*; see *heilprini* Bush, 1899.

confinium Corgan, 1967, *Turbonilla (Turbonilla)*; see *pyrrha* Bush, 1899.

conoma Bartsch, 1927, *Turbonilla (Pyrgiscus)*, p. 83, never figured. Recent off Fernandina, Florida in 294 fms.

conradi Bush, 1899, *Turbonilla*, p. 159, pl. 8, fig. 10. Recent, Florida.

constricta de Folin, 1870, *Chemnitzia*, p. 190, pl. 20, fig. 9; recent, Vera Cruz, Mexico. [Non *Odostomia (Turbonilla) constricta* Chapman and Crespin, 1928, p. 109, pl. 7, fig. 36, which may be a *Striarcana*; nor *Turbonilla incisa constricta* Bush, 1899].

constricta Bush, 1899, *Turbonilla incisa* var...; see *incisa* Bush, 1899.

contexta Pilsbry and Johnson, 1917, *Turbonilla (Nisiturris)*, p. 177, Figure in Pilsbry, 1922, pl. 36, fig. 13. Oligocene (?) of Santo Domingo.

cookei Bartsch, 1955, *Mormula*; see *tantalusi* Bartsch, 1955.

cordensis Stanton, 1920, *Turbonilla* (?) p. 34, pl. 6, figs. 8a, b. Cannon Ball Formation, Cretaceous of North Dakota. Doubtfully pyramidellid.

costulata Mighels and Adams, 1842, *Turritella*, Boston Journ. of Nat. Hist., Vol. 4, p. 50, pl. 4, fig.20. Recent Casco Bay, Maine. [Not *costulata* Verrill, 1873, *Turbonilla*, which was renamed by Bartsch, 1909 and also by Bush, 1909. Not pyramidellid, but *Acirsa borealis*].

costulata Verrill, 1873, *Turbonilla*; see *mighelsi* Bartsch, 1909 and *obesa* Bush, 1909.

crenulata Menke, 1830 *Oxytrema*, p. 137, no figure. Recent, Mexico, possibly Vera Cruz; figure by Dall and Bartsch, 1906, p. 340, pl. 21, fig. 6. Synonyms are:

levis C. B. Adams, 1850, *Chemnitzia*, p. 73, no figure. Recent, Jamaica. Often misspelled *"laevis"*. For figure see Clench and Turner, 1950, p. 303, pl. 49, figs. 3 and 4.

abrupta Bush, 1899, *Turbonilla* p. 168 and 172, pl. 8, fig. 4.

hippolyta Bartsch, 1955 *Turbonilla (Chemnitzia)* p. 20, pl.3, figs. 4a, b.

cacusi Bartsch, 1955, *Turbonilla (Chemnitzia)* p. 26, pl. 4, fig. 4.

geryoni Bartsch, 1955, *Turbonilla (Chemnitzia)* p. 20, pl. 3, fig. 5.

hesperusi Bartsch, 1955, *Turbonilla (Chemnitzia)*, p. 24, pl. 4, fig. 2.

alcmena Bartsch, 1955, *Turbonilla (Chemnitzia)*, p. 21, pl. 3, fig. 1.
cerberusi Bartsch, 1955, *Turbinella* (sic!) *(Chemnitzia)*, p. 26, pl. 4, fig. 7.
All Bartschs' species from the Pliocene of Florida.

cuevensis von Ihering, 1897, *Turbonilla*, p. 296, fig. 11. Oligocene of Argentina.

curta Dall, 1889, *Turbonilla* p. 337, pl. 26, fig. 7c. Recent, Yucatan Strait at 640 fms. [Not *Turbonilla curta* von Koenen, 1891, p. 625, pl. 43, figs. 5a, b, Oligocene, Germany which is not turbonillid but a *Syrnola*]. Also see *rentsii* Clessin, 1900.

curucutiensis Weisbord, 1962, *Pyrgiscus*, p. 479, pl. 45, figs. 14, 15. Lower Pliocene, Venezuela.

cynthiae de Jong and Coomans, 1988 *Turbonilla*, p. 130, pl. 7, no. 676a. Recent, Curacao.

dalli Bush, 1899, *Turbonilla*, p. 169 and 173, pl. 8, fig. 8. Recent, North Carolina, Florida.

dealbata Stimpson, 1851, *Chemnitzia*, p. 114, no figure. Recent, Mass. and Connect. (U.S.A.). Not turbonillid but *Odostomia*.

deboeri de Jong and Coomans, 1988 *Turbonilla*, p. 128, pl. 7, no. 665. Recent, Aruba.

dianae Bartsch, 1955, *Pyrgiscus*; see *acicula* Holmes, 1860. (under *interrupta* Totten, 1835).

dispar Pilsbry, 1897, *Turbonilla*, p. 296, pl. 6, figs. 5, 6, 7. Recent, Maldonado Bay, Uruguay, in 3-6 fms. Close to *conradi* Bush, 1899.

dominicensis Gabb, 1873, *Turbonilla*, p. 225, no figure. Oligocene (?) Santo Domingo; figured by Maury, 1917, p. 148, pl. 25, fig.14 and Pilsbry, 1922, p. 391, pl. 36, fig. 3.

dubia d'Orbigny, 1842, *Chemnitzia*, p. 226; Atlas (1853), pl. 17, figs. 4-6; type from Rio de Janeiro. Not pyramidellid but *Alabina* Dall, 1902. [not *Auricula dubia* Grateloup, 1827, p. 105, Miocene, France, which is a *Pupasyrnola*; nor *Elusa* (?) *dubia* Schepman,1909, Vol. 49, p. 244, pl. 17, fig. 9, which probably is *Elusa castanea* A. Adams, 1863, [now *Tropeas castanea* see Habe 1964, p. 130; nor *Turbonilla dubia* Bronn 18..-, (non vidi), p. 175, pl. 11, fig. 15; nor *Turbonilla gracilis* var *dubia* Seguenza, 1880, p. 112, pl. 11, fig. 34, Pliocene Southern Italy, which acc. to Sacco, 1892, p. 89 is a species in its own right and not related to *gracilis* Brocchi, 1814].

eburnea H. C. Lea, 1845, *Pasithea*, p. 251, pl. 35, fig. 46. Miocene of St. Petersburg, Virginia. Probably a *Turbonilla*.

edwardensis Bartsch, 1909, *Turbonilla (Pyrgiscus)*, p. 96, pl. 12, figs. 20 and 25. Recent Prince Edward Isl., Eastern Canada. Probably identical with *whiteavesi* Bartsch, 1909, which might be an extreme form of *interrupta* Totten, 1835.

egressa Pilsbry and Johnson, 1917 *Turbonilla (Tragula)*, p. 178. Figure in Pilsbry, 1922, p. 392, pl. 36, fig. 3. Oligocene (?) of Santo Domingo. Not turbonillid but odostomiid.

electra Bartsch, 1927, *Turbonilla (Strioturbonilla)*, p. 78, never figured. Recent, off Fernandina, Florida in 294 fms.

elegans d'Orbigny, 1842 *Chemnitzia*, p. 223, atlas (1853), pl. 11, figs. 25, 27. Recent, Cuba. Possibly a *Besla* and odostomiid. Synonyms are *olus* Corgan, 1967, *Turbonilla (Pyrgiscus)*, p. 224, pl. 12, fig. 2. Pleistocene Mississippi Delta (Mudlump fauna). Non validated taxon (unpublished Ph.D. thesis). Possibly also: *arnoldoi* de Jong and Coomans, 1988, *Turbonilla*, p. 130, pl. 20, no. 6, recent, Curacao. [Not *Turbonilla elegans*, Seguenza, 1876, p. 14, Pliocene of Southern Italy (see also Sacco, 1892, p. 74); nor *Turbonilla elegans* S. V. Wood, 1842, p. 536 (nomen nudum); nor *Turbonilla elegans* Verrill, 1872, later renamed *elegantula* Verrill, 1882].

elegans Verrill, 1872, *Turbonilla*; see *elegantula* Verrill, 1882.

elegantula Verrill, 1882, *Turbonilla*, p. 538, fig. 3. Recent, Vineyard Sound, Mass. Replacement name for *T. elegans* Verrill, 1872. Synonyms are: *branfordensis* Bartsch, 1909. *Turbonilla (Pyrgiscus) elegantula* var...,pl. 12, fig. 27, Mass. to Connecticut, *hecuba* Dall and Bartsch , 1913, *Turbonilla (Prygiscus)*, p. 141, pl. 10, fig. 6. Recent, east coast Canada.

ellisi Corgan, 1967, *Turbonilla (Pyrgiscus)*, p. 233, pl. 4, fig. 4, Pleistocene Mississippi Delta (Mudlump fauna). Non validated taxon (unpublished Ph.D. thesis).

emertoni Verrill, 1882, *Turbonilla*, p. 536, pl. 58, figs. 14, 14a. Recent, off Martha's Vineyard in 238 fms. Of uncertain affinity.

enna Bartsch, 1927, *Turbonilla (Strioturbonilla)*, p. 81. Never figured. Recent, off Fernandina, Florida in 294 fms. Not *Turbonilla (Mormula) enna* Bartsch, 1927, p. 10, pl. 2, fig. 8. Recent, California.

eopatagonica von Ihering, 1907, *Turbonilla*; see *iheringi* Cossmann, 1899.

erwini Corgan, 1967, *Turbonilla (Turbonilla)*, p. 215, pl. 11, fig. 1. Pleistocene, Mississippi Delta (Mudlump fauna). Non validated taxon (unpublished Ph.D. thesis).

erythrosclera Mörch, 1875, *Chemnitzia (Elusa)*, p. 160, no figure. Recent, St. Thomas, West Indies. Of uncertain affinity.

ethellina Dall, 1915, *Turbonilla (Ptycheulimella)*, p. 84, pl. 12, fig. 20. Oligocene of Tampa, Silex Beds, Florida. Non turbonillid but eulimellid.

eurytioni Bartsch, 1955, *Turbonilla (Chemnitzia)*, p. 23, pl. 4, fig. 1, Pliocene Florida.

exarata H. C. Lea, 1845, *Pasithea* p. 251, pl. 35, fig. 44. Miocene of St. Petersburg, Virginia; sometimes ascribed to Holmes, 1860. (See also Dall, 1892, p. 255). Pleistocene of South Carolina. Dall, 1892, believed that Holmes' specimens were not the same species as those of Lea and renamed them *Turbonilla virgata*. (see *virgata*, Dall, 1892). A possible synonym (not verified) is Holmes *Turbonilla lineata,* of which Texas recent material exactly resembles Lea's figure.

exilis C. B. Adams, 1850, *Chemnitzia*, p. 74, no figure available. Recent, North Carolina, West Indies. Type lost (fide Clench and Turner, p. 280). [Not *Turbonilla exilis* Seguenza, 1876, Vol. 7, p. 14, Pliocene, Italy].

facetus Weisbord, 1962, *Pyrgiscus*, p. 467, pl. 45, figs. 8-9. Pliocene, Cabo Blanco, Venezuela.

falcifera, Watson, 1880, *Dunkeria*, p. 251. Figure in Watson, 1886, pl. 34, fig. 5. Recent, 1000-1075 m, off Bermuda. Not turbonillid but *Tragula*.

fasciata d'Orbigny, 1846 *Chemnitzia*, p. 496, pl. 76, figs. 4-7. Recent Rio de Janeiro. For figure see Rios, 1985, p.166, pl. 55. [non *Dunkeria fasciata* Tenison Woods, 1875, p. 14 (probably not turbonillid); nor *Chemnitzia fasciata* Requien, 1848, p. 59, which is *Pyrgiscus crenatus*.]

flavocincta C. B. Adams, 1850, *Chemnitzia*, p. 74, no figure. Recent, Jamaica. For figure see Clench and Turner, 1950, p. 281, pl. 49, fig. 8. This figure cannot be distinguished from the figure of *Mormula aureocincta* Kuroda and Habe, 1971, pl. 114, fig. 10. De Jong and Coomans, 1988, p. 129, cite *flavocincta* as a synonym of *pupoides* d'Orbigny, 1842. I consider this unlikely.

flexio Corgan, 1967, *Turbonilla (Turbonilla)*; see *hemphilli* Bush, 1899.

fonteini de Jong and Coomans, 1988, *Turbonilla*, p. 131, pl. 20, no. 679. Recent, Curacao. This is probably *Odostomella doliolum* Philippi, 1844 which appears to be worldwide.

formosa Verrill and Smith, 1880, *Turbonilla*; see *magnifica* Seguenza, 1880. [not *Odostomia formosa* Jeffreys, 1848, p. 347 which is

a *Pyrgiscus*; nor T*urbonilla formosa*, Vincent and Rutot, 1879 p. 141. Tertiary, Belgium].

fragilis Dall, 1892, *Turbonilla (Ondina)*, p. 253, pl. 20, fig. 5. Pliocene of South Carolina. Not turbonillid but odostomiid.

fuegina Steinmann and Wilekens, 1908, *Turbonilla*, pl. 4, fig. 5. Tertiary of Tierra del Fuego. (*Eulimella*?).

fulgidula Jeffreys, 1884, *Odostomia*, p. 359, pl.27, fig. 3. Recent North Atlantic. Not an *Odostomia* but *Strioturbonilla*.

fulvocincta Thompson, 1840, *Turritella*, see *interrupta* Totten, 1835.

fustis Corgan, 1967, *Turbonilla (Turbonilla)*, p. 212, pl. 11, figs. 2, 7. Pleistocene Mississippi Delta (Mudlump fauna). Non validated taxon (unpublished Ph.D. thesis).

galeata Pilsbry and Johnson, 1917, *Turbonilla (Chemnitzia)*, p. 175. Figure in Pilsbry, 1922, pl. 36, fig. 5. [*Nisiturris* ?]. Oligocene (?) Santo Domingo.

gardnerae Bartsch, 1955, *Mormula*; see *acicula* Holmes, 1860 (under *interrupta*, Totten, 1835).

gatunensis Brown and Pilsbry, 1912, *Turbonilla (Chemnitzia)*, p. 510, text figs. 4 b, c. Miocene, Panama.

geryoni Bartsch, 1955, *Turbonilla (Chemnitzia)*; see *crenulata* Menke.

gracilis DeKay, 1843, *Turbonilla*. No data available. Referred to by Simpson, 1887, p. 58 as *Turbonilla*. [Many species named "*gracilis*" exist. The earliest is *Turbo gracilis* Brocchi, 1814, from the Italian Tertiary, which according to Sacco, 1892 is a *Pyrgolampros*. Nor *Auricula gracilis* Grateloup, 1827, (= *Turbonilla pusilla* Philippi, 1844) from the Tertiary of Southern France, nor *Chemnitzia gracilis* de Koninck, which according to Jeffreys, 1884, p. 359 is a European fossil *Odostomia*; not *Turritella gracilis* Deshayes, 1832. (=*Turbonilla lactea* Linne, 1758 according to Tryon, 1886, p. 322); nor *Chemnitzia gracilis* Philippi, 1844, Vol. 2, p. 137, pl. 24, fig. 11, which was re-named *delicata* by Monterosato, 1874, p. 267; nor *Turbonilla gracilis* Clessin, 1900, from Cuba, p. 164, pl. 29, fig. 3; nor *Mormula gracilis* Fekih, 1969, p. 42, pl. 7, fig. 11, from the Pliocene of Tunisia].

gracilis Clessin, 1900, *Turbonilla*, p. 161, pl. 29, fig. 3. Recent, Cuba; poor description and worse figure.

granadensis Weisbord, 1962, *Pyrgiscus* No. 493, pl. 45, figs. 6 and 7. Mare formation, Tertiary, Venezuela.

grandis Verrill, 1885, *Turbonilla*, p. 427. No figure available; recent off Virginia in 1582 fms. [Not *Chemnitzia grandis* Adams and Reeve, 1850, p. 52, pl. 11, fig. 17, which may be a *Lancella* according to Pilsbry, 1918, p. 316.] Probably an older name is

Turritella costulata Mighels and Adams, 1842, pl. 4, fig. 20, (reproduced in Clench and Turner, 1950, p. 269, pl. 40, fig. 16) which is not pyramidellid *(Acirsa borealis)*; in case *T. grandis* is a *Turbonilla* it would be the largest *Turbonilla* of the Americas. It comes from deep water. *T. grandis* measures 18 mm. in length and *T. costulata* .7 inch=17.5 mm. It was obtained from a fish stomach. Also, possibly *louisae* Clarke, 1954 is the same.

gubernatoria Martin, 1904, *Turbonilla (Tragula)*, p. 224, pl. 54, fig. 15. Miocene, Maryland, U.S.A. Not turbonillid *(Tragula)*.

harmionae Bartsch, 1955. *Pyrgiscus*; see *interrupta* Totten, 1835.

harrisi Bartsch, 1955, *Mormula,* see *pyrrha* Bush, 1899. [not *Turbonilla (Strioturbonilla) harrisi* Aldrich, 1907, p. 9, pl. 1, fig. 8, Eocene of Alabama].

harrisi Aldrich, 1907 *Turbonilla (Strioturbonilla)*, p. 9, pl.1, fig. 8. Eocene of Alabama U.S.A.

haycocki Dall and Bartsch, 1911, *Turbonilla (Strioturbonilla)*, p. 280, pl. 35, fig. 6, 6a. Recent, Bermuda. I disagree with the opinion of de Jong and Coomans who believe it to be a synonym of *T. puncta* C.B. Adams. It is a "good" species with the synonym *lillybeckae* Usticke, 1969, *Turbonilla*, recent Virgin Islands.

heathae Corgan, 1967, *Turbonilla, (Turbonilla)*; see *heilprini* Bush, 1899.

hebeae Bartsch, 1955, *Pyrgiscus*; see *cadmusi* Bartsch, 1955.

hecuba Dall and Bartsch, 1913, *Turbonilla (Pyrgiscus)*; see *elegantula* Verrill, 1882.

heilprini Bush, 1899, *Turbonilla*, p. 167 and 172, pl. 8, fig. 3. Recent Bermuda. Probable synonyms are:
conferta Corgan, 1967, *Turbonilla (Turbonilla)*, p. 206, pl.12, figs. 1, 5, 11,
apiculata Corgan, 1967, *Turbonilla (Turbonilla)*, p. 216, pl. 12, fig. 8,
heathae Corgan, 1967, *Turbonilla (Turbonilla)*, p. 208, pl. 12, fig. 6,
uncina Corgan, 1967, *Turbonilla (Turbonilla)*, p. 205 pl. 12, figs. 7, 12, all from the Pleistocene of the Mississippi Delta (Mudlump fauna).

hemphilli Bush, 1899, *Turbonilla*, p. 169, pl. 8, fig. 3. Recent, Florida. [Not *Turbonilla (Pyrgolampros) hemphilli*, Bartsch, 1917, p. 646, pl. 44, fig. 8, Pliocene, California] Synonyms are:
augeasi, Bartsch, 1955 *Turbonilla (Chemnitzia)*, p. 22, pl. 3, fig. 7,

admeta Bartsch, 1955 *Turbonilla (Chemnitzia)*, p. 19, pl. 3, figs. 6a, b,
hydra Bartsch, 1955, *Turbonilla (Chemnitzia)*, p. 23, pl. 3, fig. 9. All these from the Pliocene of Florida.
flexio Corgan, 1967, *Turbonilla (Turbonilla)*, p. 209-210, pl. 10, fig. 10-11. Pleistocene, Mississippi River Delta (Mudlump fauna).

hespera Bartsch, 1927, *Turbonilla (Ptycheulimella)*, p. 76, no figure available. Recent Fernandina, Florida in 294 fms. Not turbonillid but *Ptycheulimella*. A synonyn is: *melea* Bartsch, 1927, *Turbonilla (Ptycheulimella)*, p. 76, described from the same dredge sample.

hesperusi Bartsch, 1955, *Turbonilla (Chemnitzia)*; see *crenulata* Menke, 1830.

hippolyta Bartsch, 1955, *Turbonilla (Chemnitzia)*; see *crenulata* Menke, 1830.

holmesii Bush, 1899, *Turbonilla*, p. 171, new name for *T. nivea* Stimpson, 1851, p. 114, supposedly misidentified by Holmes, 1860, pl. 13; according to Bush Holmes' specimens are not *nivea*.

hybridus Bartsch, 1955, *Striopyrgus*, p. 57, pl. 10-14, figs. 1-61. In all probability the same as *cedrosus* Dall, 1884; see there. *Striopyrgus* was introduced as a "pseudogenus" and *S. hybridus* is one of the few species for which Bartsch will admit variability of shape and sculpture.

hydra Bartsch, 1955, *Turbonilla (Chemnitzia)*; see *hemphilli* Bush, 1899.

idothea Bartsch, 1927, *Turbonilla (Strioturbonilla)*, p. 82, no figure. Recent, off Fernandina, in 294.fms.

iheringi Cossman, 1899, *Turbonilla*, p. 235, pl. 10, fig. 12. Santa Cruz formation, Oligocene (?), Patagonia. Renamed "*eopatagonica*" by Von Ihering, 1907, because in 1900 Clessin described two(!) apparently different species as *iheringi*. One was renamed by von Ihering. Thus *eopatagonica* von Ihering, 1907, p. 144 is an unnecessary synonym.

iheringi Clessin, 1900, *Turbonilla*, p. 168, pl. 35, fig. 5. Recent southern Brazil. This may be different from the next species.

iheringi Clessin, 1900, *Turbonilla*, p. 174, pl. 36, fig. 7. Description is quite dissimilar, figures of both abominable. Recent, southern Brazil, and renamed by von Ihering: *clessini* v. Ihering, 1907.

incisa Bush, 1899, *Turbonilla*, p. 156, 174, pl. 8, fig. 12. Recent, West Florida. There is a "variety": *constricta* Bush, 1899; *Turbonilla incisa* var..., p. 157, West Florida. If *incisa* turns out to be a

good species, it must be renamed because of *Turbonilla incisa* von Koenen, 1891, p. 621, pl. 43, figs. 1a,b and figs. 2a, b. Lower Oligocene, Germany. I suspect that *incisa* is merely a rather coarse extreme form of *P. virga*, Dall, 1884.

inclinata Bush, 1899, *Turbonilla*, p. 168 and 172, recent, St. Thomas, West Indies; described from a single broken specimen.

indianola "Stm" Paetel, 1888, *Chemnitzia*, p. 259. Blunder by Paetel, who mistook location for trivial name (Indianola is on the Texas coast).

inoae Bartsch, 1955, *Pyrgiscus*; see *cingulata* Dall, 1892. Under *reticulata* C. B. Adams.

inornata Bush, 1909, *Turbonilla bushiana* var..., see *magnifica* Seguenza, 1880.

insititia Pilsbry and Johnson, 1917, *Turbonilla (Nisiturris)*, p. 392, pl. 36, fig. 9. Oligocene (?) of Santo Domingo.

insularis Dall and Simpson, 1901, *Turbonilla*, p. 415, pl. 53, fig. 21. Recent Mayaguez, Porto Rico.

interrupta Conrad, 1858 *Chemnitzia*, p. 333, pl. 35, fig. 15. Not *Turritella interrupta* Totten, 1835. Not pyramidellid.

interrupta Totten, 1835, *Turritella*, p. 352, fig. 7. Recent, Rhode Island. Entire U. S. A. east coast. Many synonyms (see also Dall, 1892, p. 259).

acicula Holmes, 1860, *Turbonilla*, p. 86, pl. 13, figs. 10a, b. Pleistocene, Wando River, South Carolina. This is a somewhat different form (ecological?) of *interrupta* of which these are synonyms:

gardernae Bartsch, 1955, *Mormula*, p. 28, pl. 4, figs. 10a, b.

dianae Bartsch, 1955, *Pyrgiscus*, p. 47, pl. 9, figs. 2a,b.

tellusae Bartsch, 1955, *Pyrgiscus*, p. 41, pl. 7, figs. 5a, b.

clionae Bartsch, 1955, *Pyrgiscus*, p. 42, pl.7, figs. 4a, b.

These are all from the Florida Pliocene.

areolata Verrill, 1873, *Turbonilla,* p. 658, no figure. Recent, Long Island Sound. Figures in Bartsch, 1909, pl. 12, figs. 19, 24, and in Bush, 1909, p. 484, fig. 4.

buteonis Bartsch, 1909, *Turbonilla (Pyrgiscus)*, p. 89, pl. 12, figs. 17, 28, 34; recent Wood's Hole, Mass.

cascoensis Bartsch, 1909 *Turbonilla (Pyrgiscus)*, p. 95, pl. 12, figs. 5, 29, 40; recent, Maine.

fulvocincta Thompson, 1840, *Turritella*, p. 98, no figure. Mediocre figures are in Kobelt, 1905, pl. 73, figs. 18, 19 and in Tyron, 1886, figs. 69-70. Recent, Port Marnock, near Dublin, Ireland. This is a European form, probably at present best considered a different species. It resembles *interrupta* Totten, 1835 quite closely, (see Dall, 1889, p. 306).
lineolata Bush, 1899, *Turbonilla*, p. 174. new name for *T. fulvocincta* Jeffreys (not Thompson). Jeffreys, 1867, Vol. 4, p. 163; Vol. 5, pl. 76, fig. 2.
obeliscus C. B. Adams, 1850 *Chemnitzia*, p. 72; recent, Jamaica, perhaps is a good species. In Texas often but not always separable from *interrupta* Totten, 1835.
obesa Bush, 1899, *Turbonilla interrupta* var..., p. 483, fig. 3. replacement name for *T. costulata* Verrill, 1873. According to Bush, Bartsch (1909) assumed that his material was identical with that of Verrill. This was denied by Bush. Bartsch, 1909 introduced the replacement name *T. mighelsi*. Thus according to Bush, Bartsch's material carries the name *mighelsi,* but Verrill's *T. costulata* is named by Bush *T. interrupta obesa.*
pseudointerrupta Bush, 1909, T*urbonilla*, p. 481. New name for *T. interrupta* Bartsch, 1909 [non Totten, 1835].
quinquestriata Holmes, 1860, *Turbonilla*, p. 85, pl. 13, figs. 5a, b, Pleistocene of South Carolina.
senilis Bartsch, 1909, *Turbonilla (Prygiscus) winkleyi* var... p., 92, pl. 12, fig. 41. Recent Connecticut.
subulata Holmes, 1860, *Turbonilla*, p. 85, pl. 13, figs. 8a, b. Pleistocene of South Carolina. [Non *subulata* C. B. Adams, 1850].
vineae Bartsch, 1909, *Turbonilla (Pyrgiscus)*, p. 83, pl. 12, figs. 22, 36. Recent, Connecticut.
viridaria Dall, 1884, *Turbonilla*, p. 332, no figure available. Cedar Key, Florida.
winkleyi Bartsch, 1909, *Turbonilla (Pyrgiscus)*, p. 90, pl. 12, figs. 35, 37. Recent, Wood's Hole, Mass.
sumneri Bartsch, 1909, *Turbonilla (Pyrgiscus)*, p. 92, pl. 14, figs. 53, 55, is probably another synonym, and also *norae* Corgan, 1967, *Turbonilla (Pyrgiscus)*, p. 221, pl. 13, figs. 2, 4. Pleistocene, Mississippi Delta (Mudlump fauna). Non validated taxon (unpublished Ph.D. thesis).

Further synonyms are all by Bartsch, 1955 from the Pliocene of Florida:
sylvanusi Bartsch, 1955, *Pyrgiscus*, p. 43, pl. 7, figs. 3a, b.
harmionae Bartsch, 1955, *Pyrgiscus*, p. 49, pl. 9, figs. 8a, b.
latonae Bartsch, 1955, *Pyrgiscus*, p. 47, pl. 9, figs. 1a, b.

iolausi Bartsch 1955, *Turbonilla (Chemnitzia)*, p. 22, pl. 3, fig. 3. Pliocene of Florida. Synonyms are:
antaeusi Bartsch, 1955, *Turbonilla (Chemnitzia)*, p. 25, pl. 4, fig. 6.
acisi Bartsch, 1955, *Turbonilla (Chemnitzia)*, p. 19, pl. 3, fig. 2.
terra Bartsch, 1955, *Turbonilla (Chemnitzia)*, p. 25, pl. 4, fig. 3. All these are from the Pliocene of Florida.

ischna Bush, 1899, *Turbonilla pupoides* var...; see *pupoides*, d'Orbigny, 1842.

karlschmidti Maury, 1917, *Turbonilla (Pyrgiscus)*, p. 149, pl. 25, fig. 15. Lower Miocene (?) Cercado formation, Dominican Republic.

krebsii Mörch, 1875, *Chemnitzia (Elusa)*, p. 159, no figure. Poor figure in Tryon, 1886, p. 311, pl. 75, fig. 13. According to de Jong and Coomans, 1988, p. 128 *palmerae* Aguayo and Jaume, 1936, *Turbonilla (Pyrgiscus)*, p. 119, figs. 1-3 is a synonym. A "variety" is *pingius* Morch, 1875, *Chemnitzia (Elusa) krebsii* var..., p. 159, recent, St. Thomas, West Indies and Cuba *(palmerae)*.

krumpermani de Jong and Coomans, 1988, *Turbonilla*, p. 131, pl. 20, No. 679, recent Curacao. [is a *Dunkeria]*. An older name may be *Turbonilla peroni* Velain, 1878.

kurtzii Mazyck, 1913, *Turbonilla*, p. (?) no figure available. Recent, Sullivan Island, South Carolina.

kymatoessa Watson, 1886, *Odostomia (Turbonilla)*; see *rhabdota* Watson, 1886.

laevigata d'Orbigny, 1842, *Chemnitzia*, p. 227, pl. 17, figs. 7-9. Re cent, entire Caribbean and Gulf of Mexico. Not turbonillid but odostomiid. Many synonyms, most by Bartsch, 1955. [not *Chemnitzia similis* var. *laevigata* S. V. Wood, 1848, nor *Mormula laevigata* Laws, 1937, p. 178, pl. 35, figs. 20, 25.]

laevis Krebs, 1864; unnecessary change in spelling of *levis* (meaning either smooth, polished, or not important, of no consequence); see *levis*.

laqueata Conrad, 1830, *Turritella*, p. 221; see *nivea* Stimpson, 1851 (fide Martin, 1904, p. 222).

latior C. B. Adams, 1850, *Chemnitzia*; see *pupoides* d'Orbigny, 1842 (fide Dall, 1892, p. 257).

latonae Bartsch, 1955, *Pyrgiscus*; see *interrupta* Totten, 1835. Possibly preoccupied by *latonae* Hornung and Mermod, 1924, *Syrnola (Elusa?)*, p. 292, text fig. 7, recent, Red Sea, which appears to be a *Turbonilla* and not a *Syrnola*.

leta Bartsch, 1927, [in] Dall, 1927 *Turbonilla (Strioturbonilla)*, p. 81, no figure. Recent, off Fernandina, Florida, in 294 fms.

leuca Bush, 1899, *Turbonilla*, p. 167 and 172, no figure. Recent, Bermuda. Figure in Verrill and Bush, 1900, p. 529, pl. 64, fig. 18.

levis C. B. Adams, 1850, *Chemnitzia*; see *crenulata* Menke, 1830.

lillybeckae Usticke, 1971, *Turbonilla*; see *haycocki* Dall and Bartsch, 1911.

lineata Holmes, 1860, *Turbonilla*; was incorrectly by Dall synonymized with *interrupta* Totten, 1835. It is an older name for *pocahontasae* Henderson and Bartsch, 1914, *Turbonilla (Pyrgiscus)*, p. 415, pl. 14. fig. 4. Recent Chincoteague Isl., Virginia. Probably a still older name is *Pasithea exarata* Lea, 1845 from the Miocene of St. Petersburg, Virginia.

lineolata Bush, 1899, *Turbonilla*; see *fulvocincta* Thompson, 1840 (under *interrupta* Totten, 1835).

louisae Clarke, 1954, *Turbonilla*, p. 118, pl. 9. Recent, from a fish stomach, off Massachusetts. Probably the same as *grandis* Verrill, 1885.

madrinensis Lamy, 1905, *Turbonilla*, p. 481, text figure 4. Recent Puerto Madryn, Golfo Nuevo, Argentina. Later spelled but incorrectly *"madrynensis"* [*Dunkeria* ?].

magnacrista Weisbord, 1962, *Pyrgiscus*, p. 474-475, pl. 45, fig. 4-5, and pl. 46, figs. 3-4. Lower Pliocene, Venezuela. Essentially unidentifiable!

magnifica Seguenza, 1880 *Turbonilla*, p. 264, pl. 16, fig. 25. Pliocene of Southern Italy. As synonyms have been cited: *abyssicola* Bartsch, 1909, *Turbonilla (Strioturbonilla) bushiana* var., p. 80, pl. 11, fig. 14 in 1525 fms. off New England. *bushiana* Verrill, 1882, *Turbonilla*, p. 537, pl. 58, fig. 16 (fide Jeffreys, 1884). Recent, New England in 365-500 m. Accord ing to Nordsieck, 1972, p. 128, pl. 6, fig. 2 a. *Magniturbonilla formosa* Verrill and Smith, 1880, *Turbonilla*, p. 398, no figure, renamed *bushiana* Verrill, 1882, because: it is not *Odostomia formosa* Jeffreys, 1848, p. 347, which is a *Pyrgiscus*; off New England in deep water; nor *Chemnitzia formosa* Klipst, 1856;

nor *Turbonilla formosa* Vincent and Rutot, 1879, Tertiaries of Belgium.

inornata Bush, 1909, *Turbonilla bushiana* var..., p. 479, no figure. Recent, off New England, U.S.A.

lactoides "Monterosato" Marshall, 1897, *Odostomia*, p. 433. Recent, eastern Atlantic. Is a *Turbonilla*.

simplex Seguenza, 1880, *Turbonilla magnifica* var..., p. 264, pl. 16, fig. 25. Pliocene of Southern Italy.

major Meyer, 1887, *Turbonilla*, p. 51, pl. 3, fig. 3. Upper Eocene, Mississippi. [not *Chemnitzia major* C. B. Adams, 1852, p. 167, no figure, recent, Panama (Pacific)].

mansfieldi Bartsch, 1955, *Mormula*; see *reticulata* C. B. Adams, 1850.

marella, Weisbord, 1962, *Turbonilla*, p. 471, pl. 44, figs. 17-18. Lower Pliocene, Venezuela.

marshalli Bartsch, 1955, *Mormula*, p. 31, pl. 5, figs, 5a, b. Pliocene of Florida. [Not *Turbonilla (Prygiscus) marshalli* Dall and Bartsch, 1909, p. 94, pl. 8. figs. 8, a. Recent, La Paz, Mexico] Synonyms are:

teskyae Bartsch, 1955, *Mormula*, p. 35, pl. 6, figs. 1a, b.

woodringi Bartsch, 1955, *Mormula*, p. 30, pl. 4, figs. 8a, b, both from the Florida Pliocene.

melea Bartsch, 1927, *Turbonilla (Pytcheulimella)*; see *hespera* Bartsch, 1927.

meyeri Bush, 1899, p. 171, footnote, new name for *T. paucistriata* Meyer, 1887, Eocene of southwest U.S.A.; [Not *T. paucistriata* Jeffreys,1884, p. 361, pl. 27, fig. 6; nomen nudum in Jeffreys, 1873, p. 112].

mighelsi Bartsch, 1909 *Turbonilla (Pyrgiscus)*, p. 88, pl. 14, figs. 52, 54. New name for *T. costulata* Verrill, 1873, p. 658, recent, Long Island Sound. [Not *T. costulata* Risso, 1826; Coen, 1933 refers to *T. costulata* Renier, 1804, but all of Renier's taxa have been declared invalid; nor *Chemnitzia costulata* Adams, 1853, p. 180 which is *Turitella costulata* Mighels and Adams, 1842, p. 50, pl. 4, fig. 20, which is not pyramidellid *(= Acirsa borealis)*.] Bush, 1909 disagreed with Bartsch, 1909 and stated that Verrill's material should carry the name *T. interrupta obesa*, Bush, 1909 and that Bartsch's specimens might be named *T. mighelsi*.

minor Bush, 1899, Turbonilla; see *pusilla* C. B. Adams, 1850. (note: both *minor* and *pusilla* are preoccupied).

miona Bartsch, 1927, *Turbonilla, (Pyrgiscus)*, p. 83, no figure. Recent off Georgia (USA) in 440 fms.

mississippiensis Meyer, 1886, *Turbonilla*, p. 70. Eocene of Mississippi. There is a "variety": *pellegrina* Gregorio, 1890, *Turbonilla missipiensis* (sic!) var..., Eocene of Alabama. According to Cossman, 1921, p. 279 it belongs in *Turbonilla neglecta* Meyer, 1886.

mitchelliana Aldrich, 1911, *Turbonilla (Mormula)*, p. 8. Eocene of Alabama. Not turbonillid but *Syrnola*.

modesta d'Orbigny, 1842 *Chemnitzia*, p. 222, Atlas (1853), figs 22-24. Recent, Cuba [not *Chemnitzia modesta*, Stimpson, 1851, nor *Truncatella modesta* C. B. Adams, 1850].

modesta Stimpson, 1851, *Chemnitzia*, p. 16, no figure. Recent, St. Georges Bank, Atlantic at 30 fms. Not turbonillid *(Odostomia)*.

modesta C. B. Adams, 1850, *Truncatella*, p. 132, no figure. Recent, Jamaica. For figure see Clench and Turner, 1950, pl. 40, fig. 17. Renamed *rixtae* by de Jong and Coomans, 1988, but possibly a much older name is *Chemnitzia turris* d'Orbigny, 1842.

multicostata C. B. Adams, 1850, *Chemnitzia*, p. 74, no figure; see *substriata* C. B. Adams, 1850. [Not *Turbonilla multicostata* Speyer, 1871, Vol. 19, pl. 11, figs. 2, 2a, Oligocene, Germany; nor T. *grubeli multicostata* Dautzenberg, 1912, p. 61, fig. 38, recent, Congo Estuary, Africa; nor *T. multicostata* DeGrange Touzin, 1895, Vol. 45, p. 402, pl. 9, figs, 2, 2a. Miocene southern France.]

myia Bartsch, 1927, *Turbonilla (Strioturbonilla)*, p. 81, no figure. Recent, off Georgia (U.S.A.), in 440 fms.

nanniebellae Maury, 1917, *Turbonilla (Mormula)* p. 150, pl. 25, fig. 20. Lower Miocene, Dominican Republic.

neglecta Meyer, 1886, *Turbonilla*, p. 69, pl. 1, fig. 4. Middle Eocene of Alabama, U.S.A.

nemea Bartsch, 1927, *Turbonilla (Strioturbonilla)*, p. 77, no figure. Recent, off Georgia (U.S.A.) in 440 fms.

nivea Stimpson, 1851, *Chemnitzia*, p. 14. Recent, in 40 fms. off New England. There is one well documented synonym:
stricta Verrill, 1873 *Turbonilla*, p. 659. Recent Long Island Sound. (see Wharton, 1975). Also have been mentioned, but extremely doubtful:
exarata H. C. Lea, 1845, *Pasithea*, p. 251, pl. 35, fig. 44, Miocene St. Petersburg, Virginia, which is in fact very close if not the same as *P. pocahantasae* Henderson and Bartsch, 1914 (see *lineatus*, Holmes).
laqueata Conrad, 1830, *Turritella*, p. 221. Tertiary of Maryland (Synonymy highly unlikely).

nonica Bartsch, 1927, *Turbonilla (Strioturbonilla)*, p. 82, no figure. Recent, off Fernandina, Florida in 294 fms., and described from a single specimen. Sometimes, misspelled "*monica*".

norae Corgan, 1967, *Turbonilla (Pyrgiscus)*; see *interrupta* Totten, 1835.

obeliscus C. B. Adams, 1850, *Chemnitzia*, p. 72. Recent, Jamaica. Type lost. Probably an ecological form *T. interrupta* Totten, 1835 (see there). [Not *T. obeliscus* Gould, 1861, p. 406, South Africa, which was renamed *T. secura* Dall and Bartsch, 1906, p. 339 and redescribed by Bartsch, 1915, p. 76, pl. 17, fig. 7].

obesa, Bush, 1909, *Turbonilla interrupta* var...; see *interrupta* Totten, 1835 [Not *obesa* Dall and Bartsch, 1909, p. 78, pl. 7, figs. 3, 3a, a synonym of the Pacific *tenuicula* Gould, 1853].

observationis von Ihering, 1907, *Turbonilla*, p. 144, no figure. New name for *Turbonilla cuevensis* Ortmann, 1900, p. 380, non von Ihering, 1897. Tertiary, Patagonia.

obsoleta Dall, 1892, *Turbonilla puncta* var...; see *puncta* C. B. Adams, 1850. [not *Turbonilla brevis obsoleta* Seguenza, 1880, p. 265. Pliocene of Southern Italy].

octona Guppy, 1897, *Turbonilla (Stylopsis)*, p. 317, pl. 27, fig. 8. Upper Oligocene of Trinidad. Not turbonillid, possibly *Ebala*.

ogilviae Maury, 1917, *Turbonilla (Chemnitzia)*, p. 147, pl. 25, fig. 11. Lower Miocene of Dominican Republic.

olssoni Maury, 1917, *Turbonilla (Pyrgiscus)*, p. 149, pl. 25, fig. 16. Lower Miocene of Dominican Republic.

olus Corgan, 1967, *Turbonilla (Pyrgiscus)*; see *elegans* d'Orbigny, 1842.

ornata d'Orbigny, 1842, *Chemnitzia*, p. 221, Atlas (1853), pl. 16, figs. 18-20. Recent, Cuba. Poor figure in Tryon, 1886, pl. 76, fig. 15. [not: *T. ornata* Gould, 1861, p. 406, recent, Hong Kong]. A synonym is:
protracta Dall, 1892, *Turbonilla*, p. 261, pl. 13, fig. 11a, Upper Miocene to recent, North Carolina to Santo Domingo.

palmerae Aguayo and Jaume, 1936, *Turbonilla (Pyrgiscus)*; see *T. krebsii* Mörch, 1875. Perhaps *pfeifferi* Clessin, 1901 is the same.

palmerae Bartsch, 1955, *Mormula*, p. 33, pl. 5, figs. 4a, b. Pliocene of Florida. [not *palmerae* Aguayo and Jaume, 1936].

parkeri Bartsch, 1955, *Bartschella*; see *powhatani* Henderson and Bartsch, 1914.

paucistriata Meyer (non vidi). Name changed to *meyeri* Bush, 1899,

because of *T. paucistriata* Jeffreys, 1884, recent, Mediterranean. Eocene of Alabama.

peilei Dall and Bartsch, 1911, *Turbonilla* (*Strioturbonilla)*; the same as *subulata*, C. B. Adams, 1850, which however is preoccupied by *Turbonilla subulata* S. V. Wood, 1842.

pellegrina Gregorio, 1890, *Turbonilla missipiensis* (sic!) var..., see *mississippiensis* Meyer, 1886.

penistoni Bush, 1899, *Turbonilla*, p. 165, 172, pl. 8, fig. 14. Recent, Bermuda. Synonyms are: *pulchella* Heilprin, 1889 (non vidi) [Not *pulchella* d'Orbigny, 1842, pl. 16, figs. 14-17]. Another possible synonym is: *atlasi*, Bartsch, 1955. p. 24, pl. 4, figs. 5a, b. Pliocene of Florida.

peraequa Pilsbry and Johnson, 1917, *Turbonilla (Chemnitzia*); see *plastica* Guppy, 1897.

perlaquaeata Conrad, 1843, *Turritella*, p. 32. Tertiary, Maryland; Conrad, 1863, p. 566 reports it as a *Turbonilla.*

perlepida Verrill, 1885, *Turbonilla*, p. 427, no figure. Recent, Chesapeake Bay, in 70 fms.

pertenuis Gabb, 1873, *Turbonilla*, p. 226, no figure. Oligocene of Santo Domingo; figure in Pilsbry, 1922, p. 392, pl. 36, fig. 11. [*Nisiturris?*].

pfeifferi Clessin, 1901, *Turbonilla*, p. 260, pl. 29, fig. 5. Recent, Cuba, (poor description and abominable figure). Perhaps the same as *krebsii*, Mörch, 1875.

phaetoni Bartsch, 1955, *Pyrgiscus*; see *portoricana* Dall and Simpson, 1901.

phrikalea Watson, 1886, *Turbonilla*; see *pupoides* d'Orbigny, 1842.

pilsbyri Bush, 1889, *Turbonilla*; see *riisei* Mörch, 1875.

pilsbryi Bartsh, 1955, *Mormula*; [Not *pilsbryi* Bush, 1899], Pliocene of Florida.

pinguis Mörch, 1875, *Chemnitzia (Elusa) krebsii* var...; see *krebsii* Mörch, 1875.

plastica Guppy, 1897, *Turbonilla*, p. 316, pl. 28, fig. 4. Miocene of Trinidad; close to *T. angulata* Guppy, 1897. A synonym is *peraequa*, Pilsbry and Johnson, 1917, *Turbonilla (Chemnitzia)*, p. 391, pl. 36, fig. 6. Oligocene of Santo Domingo.

pocahontasae Henderson and Bartsch, 1914, *Turbonilla (Pyrgiscus)*; see *lineata* Holmes, 1860.

portoricana Dall and Simpson, 1901, *Turbonilla*, p. 414, pl. 53, fig. 15.

Recent, Mayaguez, Porto Rico. A possible synonym is: *secernenda* Dautzenberg, 1912, p. 60, pl. 2, figs. 32-33. Recent, Congo Estuary, Africa. Also synonyms are: *somnusi* Bartsch, 1955, *Pyrgiscus*, p. 44, pl. 8, figs. 4a, b. *phaetoni* Bartsch, 1955, *Pyrgiscus*, p. 48, pl. 8, figs. 6a, b. *silenusi* Bartsch, 1955, *Pyrgiscus*, p. 45, pl. 8, figs. 3a, b. *sisyphusi* Bartsch, 1955, *Pyrgiscus* p. 44, pl. 8, figs. 5a, b. These are all from the Florida Pliocene.

portoricensis, Clessin, 1900, *Turbonilla*, p. 169, pl. 35, fig. 4. Recent, Destero, Brazil.

potomacensis Clark and Martin, 1901, *Turbonilla*, p. 155, pl. 29, fig. 1. Palaeocene of Virginia, U. S. A.

powhatani Henderson and Bartsch, 1914, *Turbonilla (Pyrgiscus)*, p. 415, pl. 13, fig. 5. Recent Chincoteague Isl., Virginia, U.S.A. Synonyms are: *parkeri* Bartsch, 1955, *Bartschella,* p. 36, pl. 6, figs. 4a, b; Pliocene of Florida. Possibly *mighelsi* Bartsch, 1909 is a northerly form of it.

procera Corgan, 1967, *Turbonilla (Turbonilla)*, p. 211, pl. 11, figs, 3, 4, 9 (not all figures the same species). Pleistocene Mississippi Delta (mudlump fauna). In part could be synonym of *swifti* Bush, 1899.

protracta Dall, 1892, *Turbonilla*; see *ornata* d'Orbigny, 1842.

pseudointerrupta Bush, 1909, *Turbonilla*; see *interrupta* Totten, 1835.

pulchella d'Orbigny, 1842, *Chemnitzia*, p. 420, Atlas (1853), pl. 16, figs. 14-17. Recent, Cuba. [Not *pulchella* Heilprin, 1889, nor *Stylopsis pulchella* de Folin, 1870, p. 261, pl. 24, fig. 2, recent Sydney. See also Kisch, 1959, p. 106 (juvenile *Turbonilla*); nor *Dunkeria pulchella* A. Adams, 1860, p. 120, Japan (is a *Clathrofenella*).].

pulchra Clessin, 1900, *Turbonilla*, p. 171, pl. 35, fig. 6. Recent, Jamaica (poor description and abominable figure). [not *Turbonilla pulchra* Deshayes, 1864, p. 567, Atlas, pl. 20, figs. 24-25, which is *T. tenuiplica* Deshayes, 1825, p. 111, pl. 13, figs. 20-21, Eocene, Paris Basin.].

puncta C. B. Adams, 1850, *Chemnitzia*, p. 72, no figure. Recent, Jamaica. Figure in Verrill and Bush, 1900, pl. 64, figs. 19, 19a. As stated by de Jong and Coomans, 1988, the figure by Abbott, 1974, no. 3775, p. 306 does not appear to be

this species (it is the same as *T. virginica* Henderson and Bartsch, 1914). *T. haycocki* is not, as de Jong and Coomans state a synonym of *T. puncta*. A "variety" of *puncta* is *obsoleta* Dall, 1892, *Turbonilla puncta* var...p. 256, Pliocene Caloosahatchee River, Florida Not *T. brevis* var. *obsoleta* Seguenza, 1880, Pliocene of southern Italy].

puncturata "martens" Clessin, 1900, *Turbonilla*, p. 163, pl. 29, fig. 1. Recent, Brazil, Rio de Janeiro.

punicea Dall, 1884, *Turbonilla viridaria* var..., p. 332. Miocene to recent, Cedar Keys, North Carolina to Florida. Figure in Perry and Schwengel, 1955, p. 120 and Abbott, 1974, no. 3777. [not *T. punicea*, Okutani, 1964, p. 442, pl. 7, fig. 15, which was renamed *corgani* Okutani, 1968].

pupapicula Weisbord, 1962, *Turbonilla (Nisiturris)*, p. 473, pl. 45, figs. 2, 3, pl. 46, fig. 2. Lower Pliocene, Venezuela.

pupoides d'Orbigny, 1842, *Chemnitzia*, p. 224, Atlas (1853), pl. 16, figs. 32-36. Recent, Cuba. There are several synonyms:
ischna Bush, 1899, *Turbonilla pupoides* var..., p. 153. Recent, Bermuda.
latior C. B. Adams, 1850, *Chemnitzia*, p. 72. Recent, Jamaica.
phrikalea Watson, 1886, *Turbonilla*, p. 493, pl. 32, fig. 7. Recent, Culebra Island, West Indies, in 390 fms.
subcoronata Homes, 1860, *Turbonilla*, p. 87, pl. 13, figs. 12A, B. Pleistocene of North Carolina. De Jong and Coomans, 1988, p. 130, also cite *flavocincta* C. B. Adams as a synonym. I disagree.

pusilla C. B. Adams, 1850, *Cheminitzia*, p. 74; no figure. Recent, Jamaica. Figure in Clench and Turner, 1950, p. 335, pl. 49, fig. 11. [not *pusilla* Philippi, 1844, p. 224, pl. 28, fig. 21, a European species with several synonyms]. Both Bush and Cossmann noted this and invented names which both are preoccupied: *minor* Bush, 1899, *Turbonilla*, p. 172, preoccupied by *T. minor,* Seguenza, 1876, p. 14, Pliocene of southern Italy. Moreover on the same page Seguenza, 1876 has *T. rufa* var. *minor*, and
adamsi Cossmann, 1912, *Turbonilla*, p. 214, preoccupied by *T. adamsi* Clessin, 1900, recent, Hong Kong.

pustulella Weisbord, 1962, *Turbonilla (Chemnitzia)*, p. 472, pl. 44, figs. 19-20. Upper Pliocene, Venezuela.

pyrrha Bush, 1899, *Turbonilla*, p. 160, pl. 8, fig. 1. Recent, St. Thomas,

West Indies [Non *pyrrha* Bartsch, 1927]. Synonyms are:
harrisi Bartsch, 1955, *Mormula*, p. 32, pl. 5, figs. 1a, b. Pliocene of Florida.
confinium Corgan, 1967, *Turbonilla (Turbonilla)*, p. 214, pl. 11, fig. 6, Pleistocene Mississippi Delta (Mudlump fauna); not validated taxon (unpublished Ph.D. thesis).

pyrrha Bartsch, 1927, *Turbonilla (Strioturbonilla)*, p. 77, no figure. Recent, off Fernandina, Florida in 294 fms. [not *pyrrha* Bush, 1899].

pyrrhusi Bartsch, 1955, *Pyrgiscus*; see *reticulata* C. B. Adams.

querandina von Ihering, 1907. *Turbonilla (Pyrgiscus)*, p. 442, pl. 17, fig. 121. Tertiary of Argentina.

quinquestriata Holmes, 1860, *Turbonilla*; see *interrupta* Totten, 1835.

rathbuni Verrill and Smith, 1880, *Turbonilla*, p. 398, no figure. Recent, off Rhode Island; for figure see Bartsch, 1909, pl. 12, figs. 33, 39.

rentsii Clessin, 1900, *Turbonilla*, p. 165, pl. 29, fig. 9. Recent, "West Indies" e. coll. Dunker. Poor description and worse figure. Might be a synonym of *curta* Dall, 1889.

reticulata C. B. Adams, 1850, *Chemnitzia*, p. 75, no figure. Recent, Jamaica. [Not *Melania reticulata* Dubois, 1831, p. 47, pl. 31, figs. 126-127, which may be a *Turbonilla*, Tertiary, Poland; nor *reticulata* Chemnitz, cited by Doderlein, 1862, p. 17, and Sacco, 1892, p. 9 as *Turbonilla*; nor *reticulata* Emmons, 1858, Miocene of North Carolina, p. 179, figs. 156a, which possibly is a *Bartschsella*; nor *Dunkeria reticulata* A. Adams, 1860, p. 422, recent, Japan]. There are several synonyms:
cancellata Holmes, 1860, *Turbonilla*, p. 85, pl. 13, figs. 6, 6a, 6b. Pleistocene of South Carolina.
caroliniana Holmes, 1860, *Turbonilla*, p. 85, pl. 13, figs. 9, 9a, 9b. Pleistocene, Wando River, South Carolina.
cingulata Dall, 1892, *reticulata* var..., p. 260, Pliocene of South Florida (Calooshatchee Beds).

wrightvillensis Powell, 1983 *Turbonilla*. Recent, North Carolina. This particular form has synonyms (all Bartsch, 1955), Pliocene of Florida.
mansfieldi, Bartsch, 1855 *Mormula*, p. 45, pl. 8, figs. 9a, b.
pyrrhusi Bartsch, 1955, *Pyrgiscus*, p. 45, pl. 8, figs. 1a, b.

thestiusi, Bartsch, 1955, *Pyrgiscus*, p. 41, pl. 7, figs. 8a, b.
venusae Bartsch, 1955, *Pyrgiscus*, p. 40 pl. 16, figs. 5a, b.
Further synonyms by Bartsch, 1955, (all Florida Pliocene) are:
telamoni Bartsch, 1955, *Pyrgiscus*, p. 51, pl. 9, figs. 3a, b.
vishnui Bartsch, 1955, *Pyrgiscus*, p. 39, pl. 7, figs. 2a, b.
zethusi Bartsch, 1955, *Pyrgiscus*, p. 38, pl. 6, figs. 7a, b.
yamai Bartsch, 1955, *(Pyrgiscus)*, p. 38, pl. 6, fig. 6a, b.
Probably also belongs here:
wilberti Corgan, 1967, *Turbonilla (Pyrgiscus)*, p. 233, pl. 13, fig. 5. Pleistocene, Mississippi Delta, (Mudlump fauna). Non validated taxon (unpublished Ph.D. thesis).

reticulata Emmons, 1858, *Chemnitzia*, p. 179, fig. 156a. Miocene of North Carolina [Not *reticulata*, C. B. Adams, 1850].

rhabdota Watson, 1886, *Odostomia (Turbonilla)*, p. 491, pl. 32, fig. 4. Recent, off Culebra Island, West Indies, in 390 fms. Synonyms:
kymatoessa Watson, 1886, *Odostomia (Turbonilla)*, p. 492, pl. 32, fig. 6. Recent, off Culebra Island, West Indies in 390 fms.
valida Verrill and Bush, 1900, *Turbonilla*, p. 528, pl. 64, fig. 20, recent, St. Thomas, West Indies. [is *Dunkeria*].

rhea Bartsch, 1927, *Turbonilla (Strioturbonilla)*, p. 79, no figure. Recent, off Fernandina, Florida, in 294 fms.

riisei Mörch, 1875, *Chemnitzia*, p. 165, no figure, recent, St. Thomas, West Indies. A synonym is:
pilsbryi Bush, 1899, *Turbonilla*, p. 151 and 176, pl. 8, fig. 9. Recent, St. Thomas, West Indies. [is a *Dunkeria*].

riomaoensis Maury, 1917, *Turbonilla (Pyrgiscus)*, p. 150, pl. 25, fig. 18. Lower Miocene, Dominican Republic.

rixtae de Jong and Coomans, 1988, *Turbonilla*, p. 129, pl. 7, 20 and 46. Replacement name for *Truncatella modesta* C. B. Adams, 1850, which is a *Turbonilla*; recent, Jamaica, Aruba. See also *modesta* C. B. Adams. Possibly *turris* d'Orbigny, 1842 is an earlier name.

robertsonae Bartsch, 1955, *Mormula*; see *vaughani* Bartsch, 1955.

rolfei Corgan, 1967, *Turbonilla (Pyrgiscus)*, p. 232, pl. 13, fig. 1. Pleistocene, Mississippi Delta, (Mudlump fauna). Non validated taxon, (unpublished Ph.D. thesis).

rushii Bush, 1899, *Turbonilla* p. 160, 174, pl. 8, fig. 11. Recent, Maldonado Bay, Uruguay.

sabina Palmer, 1937, *Turbonilla (Ptycheulimella)*, p. 81, pl. 8, fig. 7. Lower Eocene of Alabama. Not turbonillid (*Ptycheulimella*).

santodomingensis Pilsbry and Johnson, 1917, *Turbonilla (Pyrgiscus)*, p. 175. Oligocene (?) of Santo Domingo; figure in Pilsbry, 1922, p. 391, pl. 36, fig. 4.

senilis Bartsch, 1909, *Turbonilla (Pyrgiscus)*; see *interrupta*, Totten, 1835.

silenusi Bartsch, 1955, *Pyrgiscus*; see *portoricana* Dall and Simpson, 1901.

simplex H. C. Lea, 1845, *Acteon*, p. 258, pl. 36, fig. 2. Miocene of Virginia (U.S.A.), cited by d'Orbigny, 1853 as *Turbonilla*.

simplex d'Orbigny, 1842, *Chemnitzia*, p. 224, Atlas (1853), pl. 53, figs. 28-31. Recent, Cuba. Probably not turbonillid. *Eulimella* ? [not *simplex* Seguenza, 1880, *Turbonilla magnifica* var..., (see *magnifica* Seguenza); nor *Turbonilla simplex* Deshayes, cited in Rigacci catalogue, 1874].

simplicior Guppy, 1897, *Turbonilla,* p. 317, pl. 28, fig. 1. Oligocene (?) of Jamaica.

sirena Bartsch, 1927, *Turbonilla (Strioturbonilla)*, p. 79, no figure. Recent off Fernandina, Florida, in 294 fms.

sisyphusi Bartsch, 1955, *Pyrgiscus*; see *portoricana* Dall and Simpson, 1901.

smithii Verrill, 1881, *Turbonilla*, p. 380, no figure. Recent, N. W. Atlantic. Not turbonillid, but *Ptycheulimella unifasciata* Forbes, 1844. [Non *Turbonilli smithii* "Pfeiffer ms." Strebel, 1905, which was renamed *T. strebeli* Corgan, 1969.

smithii "Pfeiffer m.s." Strebel, 1905, *Turbonilla*; see *strebeli* Corgan.

sommusi Bartsch, 1955, *Pyrgiscus*; see *portoricano* Dall and Simpson, 1901.

speira Ravenel, 1858, *Chemnitzia*, p. 280, no figure. A figure is given by Holmes, 1860, pl. 13, figs. 1, 1a. By several workers considered a form of *interrupta*, Totten, 1835. In Texas completely separable. Recent, Carolinas, Texas.

spirata, Kurtz and Stimpson, 1851, *Chemnitzia*, p. 115, no figure. Recent, North Carolina. Thought to be an *Odostomia*, but not *Odostomia spirata*, A. Adams, 1860.

springvaleensis Rutch, 1942, *Turbonilla (Peristichia)*, p. 137, pl. 6, fig. 2. Upper Miocene (?) Trinidad. Not pyramidellid *(Peristichia)*. Possibly *P. agria* Dall, 1889.

stimpsoni Bush, 1899, *Turbonilla*, p. 156, pl. 8, fig. 7. Recent, South Carolina. A possible Pacific analogue is *Turbonilla (Pyrgiscus) ceralva* Dall and Bartsch, 1909, p. 104, pl. 10, figs. 5, 5a, recent, Gulf of California.

strebeli Corgan, 1969, *Turbonilla*, p. 574; replacement name for

Turbonilla smithii Strebel, 1905 [non Verrill, 1881]. Recent Burdwood Bank, South Atlantic at 56 fms.

stricta Verrill, 1873, *Turbonilla*; see *nivea* Stimpson, 1851 [Not *T. stricta* Clessin, 1900, p. 168, pl. 35, fig. 3, China; nor *T. stricta* Pallary, 1904, p. 236, pl. 7, fig. 17. Recent, Tunisia, which was renamed *pallaryi* Dautzenberg, 1910, p. 141, and again unnecessarily with the same name by Nordsieck, 1972, p. 124, !].

subcoronata Holmes, 1860 *Turbonilla*; see *pupoides* d'Orbigny, 1842.

substriata C. B. Adams, 1850, *Chemnitzia*, p. 73, no figure. Synonym: *multicostata* C. B. Adams, 1850, *Chemnitzia*, p. 74, no figure. Recent, Jamaica. See also Clench and Turner, 1950, p. 311, pl. 49, fig. 7.

subulata C. B. Adams, 1850 *Chemnitzia*, p. 73, no figure. See also Clench and Turner, 1950, p. 316. [Not *subulata* Holmes, 1860, p. 85; nor *Turbonilla subulata* S. V. Wood, 1842, Pliocene of Great Britain, which is *T. elegantissima* Mont. 1803; not *Turbonilla subulata* Sandberger, 1861, p. 172, pl. 15, figs. 4, 4a which is *Syrnola turriculata* Bosquet, 1859; nor *Pyramidella subulata* Merian, 1851, often reported as a *Turbonilla*, which is a *Syrnola* (see Görges, 1952, p. 77); nor *Turbonilla subulata* Clessin, 1900, p. 167, p;. 29, fig. 4, recent Amboina, Indonesia. A synonym is"
peilei Dall and Bartsch, 1911, *Turbonilla (Strioturbonilla)*, p. 280, pl. 35, figs.9, 9a. Recent, Bermuda.

subulata Holmes, 1860, *Turbonilla*; see *interrupta* Totten, 1835.

sumneri Bartsch, 1909, *Turbonilla (Pyrgiscus)*, p. 92, pl. 14, figs. 53 and 55, recent, New England, most probably a juvenile of *interrupta*, Totten, 1835.

suturalis Gould, 1862, *Dunkeria,* p. 280, no figure. Recent, Charleston Harbour, South Carolina [not *T. suturalis* Cossmann, 1888, p. 111, pl. 4, fig. 41, Eocene of France, which is a *Belonidium*; nor *T. suturalis* Bonelli, 1826, cited by Sacco, 1890, p. 185 for the Italian Pliocene.]

swiftii Bush, 1899, *Turbonilla*, p. 166 and 173, no figure. Recent, Bermuda. Figure in Verrill and Bush, 1900, p. 529, pl. 64, figs. 21-21a.

sylvanusi Bartsch, 1955, *Pyrgiscus*; see *T.interrupta*, Totten, 1835.

tabulatella Corgan, 1967, *Turbonilla (Pyrgiscus)*, p. 227, pl. 13, fig. 3, Pleistocene, Mississppi Delta (Mudlump fauna). Non validated taxon (unpublished Ph.D, thesis). A Pacific analogue may be

Chemnitzia turrita C. B. Adams, 1852, p. 393, and 526, no figure. Figure in Dall and Bartsch, 1909, p. 130, pl. 12, figs. 12, 12a, as *Turbonilla (Asmunda) turrita*, or in Turner, 1956, *Chemnitzia*, p. 94, pl. 8, fig. 13. A synonym may be: *buskirkae* Corgan, *Turbonilla (Pyrgiscus)*, p. 226, pl. 13, figs. 9, 13. Pleistocene Mississippi Delta (Mudlump fauna). Non validated taxon (unpublished Ph.D. thesis).

tantalusi Bartsch, 1955, *Pyrgiscus*, p. 43, pl. 7, figs. 6a, b. Pliocene of Florida. There is a possible recent Pacific analogue: *Turbonilla (Pyrgiscus) sanctorum* Dall and Bartsch, 1909, p. 98, pl. 9, figs. 2a, b. Recent, off La Paz, Lower California in 26 1/2 fms. A synonym is probably: *cookei* Bartsch, 1955, *Mormula*, p. 30, pl. 5, figs 2a, b. Pliocene of Florida.

tardiuscula Aldrich, 1921,*Turbonilla (Ptycheulimella)*, p. 9 pl. 1, fig. 2. Lower Eocene, Alabama, U.S.A. Not turbonillid, but *Ptycheulimella*.

telamoni Bartsch, 1955, *Pyrgiscus*: see *reticulata* C. B. Adams, 1850.

tellusae Bartsch, 1955, *Pyrgiscus*: see *acicula* Holmes, 1860, under *interrupta* Totten, 1835.

tenuilineata Guppy, 1897, *Turbonilla*, p. 317, pl. 28, fig. 8. Oligocene (?) of Jamaica. Not turbonillid, but *Pytcheulimella*.

terra Bartsch, 1955, *Turbonilla (Chemnitzia)*; see *iolausi* Bartsch, 1955.

teskyae Bartsch, 1955, *Mormula*, see *marshalli* Bartsch, 1955.

textilis Kurtz, 1860, *Chemnitzia*, p. 8, no figure. Recent, South Carolina. Figure in Bush 1899, p. 154, pl. 8, fig. 2. *Turbonilla asperula* Bush, 1899, may be the same.

theona Bartsch, 1927, *Turbonilla (Strioturbonilla)*, p. 78, no figure. Recent, off Fernandina, Florida, in 294 fms. Note: the trivial name is different from *theone*, used for *Turbonilla theone* Bartsch, 1924, p. 2, pl. 1, fig. 6, from Ecuador.

thestiusi Bartsch, 1955, *Pyrgiscus*; see *reticulata* C. B. Adams, 1850.

tityusi Bartsch, 1955, *Pyrgiscus*; see *cadmusi* Bartsch, 1955.

toyatani Henderson and Bartsch, 1914; *Turbonilla (Pyrgiscus)*, p. 416, pl. 4, fig. 5 Chincoteague, Virginia. It is a possible synonym of *interrupta* Totten, 1835. Synonyms are: *apolloi* Bartsch, 1955, *Pyrgiscus*, p. 46, pl. 8, fig. 2a, b, and *aesoni* Bartsch, 1955, *Pyrgiscus*, p. 52, pl. 9, figs. 7a, b, c, both from the Florida Pliocene.

trigemmata Conrad, 1860, *Turbonilla (Chemnitzia)*, p. 288, pl. 47, fig. 33. Lower Eocene, Alabama. Not pyramidellid *(Pleuroceratidae)*.

turris d'Orbigny, 1842, *Chemnitzia*, p. 396, Atlas (1853), pl. 16, figs. 10-13. Recent Rio de Janeiro (see also *modesta* C. B. Adams, 1850).

turritella Pfeiffer, 1840, *Melania*, p. 254, no. 80. Figure in Clessin, 1900, pl. 27, fig. 7 *Turbonilla*; poor. According to Bush, 1899 "relations doubtful". Recent, Cuba.

turritelloides Gabb, 1873, *Turbonilla*, p. 226. Figure in Pilsbry, 1922, p. 391, pl. 36, fig. 1. Tertiary of Santo Domingo. Not turbonillid, probably a *Visma*.

turritissima Guppy , 1897, *Turbonilla*, p. 316, pl. 28, fig. 5. Oligocene (?), Jamaica.

uncina Corgan, 1967, *Turbonilla (Turbonilla)*; see *heilprini* Bush, 1899.

undecimcostata Pilsbry and Johnson, 1917, *Turbonilla (Nisiturris)*, p. 177, no figure. Figure in Pilsbry, 1922, pl. 36, fig. 10. Oligocene (?) of Santo Domingo.

undecimsulcata Hilgard and Hopkins, 1878, p. 28 (?) [non vidi]; no data; from a well boring in Louisiana.

unilirata Bush, 1899, *Turbonilla (Turbonilla)*, p. 205, pl. 12, figs. 9 and 12. Recent, St. Thomas, West Indies.

uruguayensis Pilsbry, 1897. *Turbonilla*, p. 296, pl. 6, figs. 8, 9, 10. Recent, Uruguay.

valida Verrill and Bush, 1900, *Turbonilla*; see *rhabdota* Watson, 1886.

vaughani Bartsch, 1955, *Mormula*, p. 27, pl. 6, fig. 3a, b. Pliocene of Florida. Synonyms are:

robertsonae Bartsch, 1955, *Mormula*, p. 34, pl. 5, figs. 3a, b. Pliocene of Florida.

alfredi Abbott, 1958, *Turbonilla (Pyrgiscus)*, p. 104, text fig. 5, recent, Grand Cayman Isl. That is the name that should be used because *vaughani* is defined by a single incomplete fragment (4 top whorls missing and incomplete aperture so that it can be identified only by a very special property: two very thin threads on the columella.

venusae Bartsch, 1955, *Pyrgiscus*; see *reticulata* C. B. Adams, 1850.

verkrüzeni Clessin, 1902, *Turbonilla*, p. 258, pl. 41, fig. 8. Recent, Haiti.

verrilli Bartsch, 1909, *Turbonilla (Pyrgiscus)*, p. 82, pl. 12, figs. 21 and 26. Recent, Martha's Vineyard, Mass, U. S. A. Possibly also a synonym of *interrupta* Totten, 1835.

vineae Bartsch, 1909, *Turbonilla (Pyrgiscus)*; see *interrupta* Totten, 1835.

virga Dall, 1884, *Turbonilla viridaria* var (?)..., p. 332, no figure. Recent, Cedar Keys, Florida. For figure see de Jong and Coomans, 1988, pl. 45, no. 663.

virgata Dall, 1892, *Turbonilla*, p. 255; no figure. New name for Holmes' specimens of *Pasithea exarata*, Lea, 1845.

virginica Henderson and Bartsch, 1914, T*urbonilla (Pyrgiscus)*, p. 416, pl. 13, fig. 4. Recent, Chincoteague Isl., Virginia, U.S.A. The fossil *bruscasensis* Weisbord, 1962, looks the same. Abbott (1974) has figured the type figure of *virginica* as *Turbonilla puncta* C. B. Adams, 1850.

viridaria Dall, 1884, p. 332, *Turbonilla*, no figure available. Recent, Florida, see *interrupta* Totten, 1835.

vishnui Bartsch, 1955, *Pyrgiscus*; see *reticulata* C. B. Adams, 1850.

westermanni de Jong and Coomans, 1988, *Turbonilla*, p. 129, pl. 46, no. 671. Recent, Aruba. Belongs in the genus *Tathrella* Laseron, 1959.

whiteavesi Bartsch, 1909, *Turbonilla (Pyrgiscus)*, p. 93, pl. 12, figs 32 and 38. Probably identical with *edwardensis* Bartsch, 1909. Recent, Atlantic coast of Canada. Possibly an extreme form of *interrupta*, Totten, 1835.

wilberti Corgan, 1967, *Turbonilla (Pyrgiscus)*; see *reticulata* C. B. Adams, 1850.

winkleyi Bartsch, 1909, *Turbonilla (Pyrgiscus)*; see *interrupta* Totten, 1835.

woodringi Bartsch, 1955, *Mormula*; see *marshalli* Bartsch, 1955.

wrightvillensis Powell, 1983, *Turbonilla*; see *reticulata* C. B. Adams, 1850.

yamai Bartsch, 1955, *Pyrgiscus*; see *reticulata* C. B. Adams, 1850.

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Miss Sandra A. Alvarado is this year's recipient of the Dr. Harold W. Harry Award of $500.00 provided by the Houston Conchology Society, Inc.

Miss Alvarado recently completed her Master's Degree at the Center of Coastal Studies at Texas A. & M. University of Corpus Christi, under the guidance of her major professor, Dr. John W. Tunnell, Jr.

Miss Alvarado will continue her research by examining the distribution of oyster reef habitat in the Nueces-Corpus Christi Bay. She plans to employ aerial photography, global positioning, and a geographic information system to determine both an historical counterpart and base line for assessing past and present oyster reef habitat.

Miss Alvarado hopes to continue her studies as a Ph.D. candidate at Texas A. & M. University.

The Houston Conchology Society plans to continue this award on a yearly basis as available to graduate students of Texas Colleges and institutions doing studies in Malacology.

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